ATTACHMENT 10

ENVIRONMENTAL ASSESSMENT FORM

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATERWAYS ENGINEERING AND WETLANDS

CHAPTER 105 ENVIRONMENTAL ASSESSMENT FORM

			Item Included	Item Location
Note: The Department may waive a specific information requirement in writing, at the request of the Applicant, during the pre-application review process if the Department determines the information is not necessary to complete the review.				
Module S1: Project Summary				
This module is intended to organize information in order to present an overall summary of the project scope, certain key information requirements and when applicable, a comprehensive view of the overall project and related projects.				
A. Provide an overall project description and If the answer to the question below is **YES**, address CEA requirements; otherwise proceed to **S1.B** Comprehensive Environmental Assessment (CEA) when applicable. Answer the following question:			☒	Mod S1.A
Does the "overall" project require more than one Ch. 105 permit in more than one county or will the project be completed in more than one phase?	☒ Yes	☐ No		
B. Provide information related to the project purpose, need, water dependency and summarize the amount and type of resources present and the temporary and permanent impacts proposed to those resources.			☒	Mod S1.B
Module S2: Resource Identification and Characterization				
This module is intended to organize information related to the identification of the resources present on the project site and to characterize those resources that may be affected by the proposed project.				
A. Provide the standard resource identification information, location map, wetland determination or delineation reports; watercourse reports; identification and qualifications of preparers; location map, and answer the related questions.			☒	Mod S2.A, S2.B; Apps A and B
Is the site located within or adjacent to any of the following; or within 100 feet of items vii or viii?				
i. National, state or local park, forest or recreation area	☐ Yes	☒ No		
ii. National natural landmark	☐ Yes	☒ No		
iii. National wildlife refuge, or Federal, state, local or private wildlife or plant sanctuaries	☐ Yes	☒ No		
iv. State Game Lands	☐ Yes	☒ No		
v. Areas identified as prime farmland	☒ Yes	☐ No		Mod S3.B
vi. Source for a public water supply	☐ Yes	☒ No		
vii. A National Wild or Scenic River or the Commonwealth's Scenic Rivers System	☐ Yes	☒ No		
viii. Designated Federal wilderness area	☐ Yes	☒ No		
B. Identify all aquatic resources present on the project site and provide an identifier, the resource type; size of the resource(s); fishery designations, Ch. 93 uses and special protection status; and Exceptional Value (EV) wetland analysis.			☒	Mod S2.D; App 2 (tables)
C. Provide the following information related to habitat for Federal threatened and endangered (T&E) plant and animal species or State T&E species or species of special concern - copies of search forms or search receipts; identification of avoidance and minimization efforts taken to resolve identified conflicts.			☒	Mod S2.C; Att 5 of JPA
Did the PNDI search or agency coordination identify any potential conflicts?	☒ Yes	☐ No		Att 5 of JPA
If the above is answered **YES**; answer the following two questions related to PNDI Coordination:				
a. *Is the applicant utilizing a sequential review of the PNDI coordination?*	☐ Yes	☒ No		
b. *Is the applicant utilizing a concurrent review of the PNDI coordination?*	☒ Yes	☐ No		Att 5 of JPA
D. Characterize the aquatic resources: riverine, wetland and lacustrine present on the project site that are proposed to be directly or indirectly affected by the project. Including but not limited to the following, resource classification information, Level 2 rapid condition assessment results, discussion of resource functions, characterization of riparian properties and any other relevant information or studies conducted.			☒	Mod S2.D; App 2 (tables)
Module S3: Identification and Description of Potential Project Impacts				

*This module is intended to organize and present information concerning the potential impacts or effects of the proposed project **in this** application. Impacts related to the "over all" project that are proposed under related but separate application(s) should be addressed as part of the CEA Policy response under **S1.A**.*

A. Provide a summary table of the proposed temporary and permanent direct and indirect impacts for each effected resource category (e.g. riverine, wetlands and lacustrine resources).	☒	Mod S3.A
B. If any questions from **S2.A** Standard Information Response questions were answered YES, discuss in detail any potential impacts to those resource(s).	☒	Mod S3.B
***IMPORTANT NOTE**: If either item vii or viii from S2.A is answered YES, the project is not eligible as a "Small Project Application" type. Complete all applicable sections of the EA form for the standard application type unless an item was otherwise waived by the Department in writing (see previous Note on waiving of information requirements).*		N/A

	Included	Item Location
C. Provide a table(s) of all proposed water obstruction(s), encroachment activities and dams (e.g. subfacility codes) and provide an identifier, the subfacility code and description, resource identifier from **S2.B**, latitude and longitude, the proposed temporary and permanent direct and indirect impacts and subfacility details.	☒	App 2
D. Provide a discussion of how the proposed subfacility(ies) individually and in combination directly and/or indirectly impact the identified resource(s) and the effects on the applicable resource functions: hydrologic, biogeochemical, habitat, recreation, any other environmental impacts and the effects on the property or riparian rights of owners upstream, downstream or adjacent to the project.	☒	Mod S3.D
E. **Antidegradation Analysis** - The applicant should demonstrate consistency with State antidegradation requirements as described in the Water Quality Antidegradation Implementation Guidance Policy Document Number 391-0300-002. Project application information provided below in **S3.F, G and H** may be cross-referenced.	☒	Mod S3.E
F. **Alternatives Analysis** - The scope and extent of this analysis should be commensurate with the size and scope of the proposed project impacts *in this* application, information provided in **S4.A** below, related to avoidance and minimization efforts, may be cross-referenced.	☒	Mod S3.F; App C
G. **Potential Secondary Impact Evaluation** - Identify and describe environmental impacts on adjacent land and water resources associated with but not that direct result of the project.	☒	Mod S3.G
H. Identify and evaluate the potential cumulative environmental impacts of this project and other potential or existing projects like it, and the impacts that may result through numerous piecemeal changes to the wetland resource.	☒	Mod S3.H
Module S4: Mitigation Plan		
*This module is intended to organize and present information concerning actions undertaken in accordance with the definition of **Mitigation** in Title 25 Pa. Code Chapter 105 - §105.1, 105.16, 105.18a(a)(3), 105.18a(b)(7), 105.20a, and 105.21 as related to the potential impacts or effects of the proposed project **in this** application.*		
A. Identify and discuss any measures taken that resulted in avoiding or minimizing unavoidable resource impacts, provide detailed responses for individual proposed impact area(s) **and** the project as a whole.	☒	Mod S4.A
B. Identify and discuss any repair, rehabilitation or restorative actions taken to rectify an impacted resource, provide detailed responses for individual proposed impact area(s) and the project as a whole. Identify and discuss any proposed preservation and maintenance operations that will be taken to reduce or eliminate an impact during the life of the project.	☒	Mod S4.B
C. Provide the results from application of the Pennsylvania Function-Based Aquatic Resource Compensation Protocol. Identify and discuss any actions undertaken to provide compensatory mitigation , a detailed discussion of the proposed compensation actions and how they will offset the lost resource functions, include a comparison of the results from Section 6.0 of the Pennsylvania Function-Based Aquatic Resource Compensation Protocol with the results from Section 5.0. When applicable provide detailed plans including performance standards and success criteria.	☒	Mod S4.C
Answer the following question. If the answer to the question is **YES**, provide the information regarding the mitigation credit provider; otherwise provide a detailed mitigation plan. If the application proposes to utilize both mitigation bank or in lieu fee credits **and** conduct permittee responsible mitigation; both the credit provider and mitigation plan information shall be submitted.	☒	Mod S4.C; App D
Does the applicant propose to utilize an approved mitigation bank or PA's in lieu fee program to provide all or a portion of the compensation? ☒ Yes ☐ No		Mod S4.C
D. When applicable, provide a plan to monitor the identified actions proposed in **S4.B** and/or **S4.C** compensatory mitigation area. Applicants should utilize the Department's Design Criteria and the USACE's RGL 08-03 -(http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl08_03.pdf) to develop monitoring plans for compensatory mitigation proposals. The plan should include performance standards/success criteria, duration and timeframes of monitoring, monitoring report template, and template remedial action or adaptive management plan.	☒	Mod S4.C
Note: All or portions of this Module likely apply to "Small Project" type applications and waiver of this section should be discussed during any pre-application meetings or prior to application submittal.		
CERTIFICATION		
I certify that the above statements, attachments including those labeled and identified as Enclosures, and all conclusions are true, correct, and based upon current environmental principles and science, to the best of my knowledge and belief.		
Signature	Date 11/4/24	

Environmental Assessment (E.A. Form) Rev. 3/2022
Tioga Pathway Project, Tioga County

November 2024

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Appendices

Module S1: Project Summary

S1.A Overall Project Description

As presented in Attachment 8 of this Joint Permit Application (JPA) (Project Description), the Project is located in Potter, Tioga, and McKean counties, Pennsylvania (PA), and consists of the construction and operation of the Z20 Replacement Pipeline, YM59 Mainline Pipeline, and construction or modification of a number of auxiliary facilities (refer to Attachment 7 of this JPA for Project mapping).

Construction will involve pipeline installation via open trench excavation and horizontal directional drilling (HDD) methods and the construction of the new McCutcheon Hill Over-pressure Protection (OPP) Station and cathodic protection ground bed. The existing Z20 Pipeline generally will be replaced by removal or may be abandoned in place where conditions preclude effective removal. To avoid and minimize impact on protected bat species and nesting birds, tree clearing required for the Project is proposed to commence in early 2026 and be completed by March 31st, 2026, provided all required permits, approvals, land access, and materials have been obtained (refer to Attachment 5 of this JPA). The remainder of construction is expected to begin in the second quarter of 2026. The planned in-service target is Fall 2026 and final restoration activities are planned to be completed for the entire Project by the end of summer 2027. The crossing of environmentally sensitive resources will be conducted in accordance with State/Commonwealth of Pennsylvania timing restrictions, unless a waiver is granted by the applicable State/Commonwealth agency.

Project activities will involve aquatic resource impacts in both Potter and Tioga counties only; National Fuel has designed the Project to avoid all resource impacts in McKean County. Accordingly, in accordance with Pennsylvania Department of Environmental Protection (PADEP) Technical Policy Guidance Document No. 310-2137-006 (PADEP 2024a) and in response to Module S1.A requirements, a Comprehensive Environmental Assessment (CEA) that analyzes the alternatives, impacts, mitigation, and antidegradation for all structures and activities associated with the overall Project is included herein. Specifically, the Project is located in more than one county; therefore, information applicable to the CEA requirements are presented in this submittal for both Tioga County and the overall Project as follows:

- Alternatives – Module S3.F
- Impacts – Module S3.A, S3.D, and S3.G
- Impact Avoidance, Minimization, and Mitigation – Module S4.A
- Antidegradation Analysis – Module S3.E
- Cumulative Impacts – Module S3.H

Direct, indirect, and cumulative impacts from the proposed construction, operation, and maintenance activities are presented throughout this Environmental Assessment (EA) and detailed resource impact tables are included as Appendix B of this EA. As discussed herein, the Project will have temporary and permanent impacts to stream and wetland resources. Potential impacts will be minimized and mitigated as discussed throughout this application.

S1.B Project Purpose and Need, Water Dependency, and Summary of Resources and Impacts

Project Purpose & Need

The purpose of the Project is two-fold: (1) to provide incremental firm transportation service from the abundant Marcellus and Utica shale production area in Tioga County, Pennsylvania to various points on the interstate pipeline system grid and (2) to modernize a portion of National Fuel's existing Z20 Pipeline system in Potter County, Pennsylvania.

The proposed Project will provide 190,000 Dth/day of firm transportation capacity from the Tioga County, Pennsylvania natural gas production area to downstream delivery points with other interstate pipelines, including primary firm delivery to Tennessee Gas Pipeline Company, L.L.C. and Transcontinental Gas Pipe Line Company, LLC, secondary firm delivery to pipeline interconnections throughout National Fuel's system, and redelivery to additional pipeline interconnections on downstream pipelines, providing access to a wide range of markets in the United States and Canada. The Project will allow abundant, responsibly-sourced Appalachian natural gas supplies to reach various markets via these interconnections, increasing the availability of critical energy supplies, and overall reliability and resiliency of the natural gas interstate pipeline system.

National Fuel also proposes to replace an approximately 3.84-mile section of 12-inch diameter 1936-vintage bare steel pipeline with 20-inch diameter coated steel pipeline, thereby modernizing a portion of National Fuel's Z20 Pipeline system. This portion of the Project will allow National Fuel to continue providing safe, reliable, and efficient service to customers in accordance with its current transportation and storage contracts.

The proposed replacement of existing measurement, OPP devices, flow control, and other associated appurtenances at National Fuel's existing Ellisburg Compressor Station (CS) will use existing available compression capacity for the new transportation service described above, modernize the facilities, and increase the flexibility of the station function, necessary to provide the addition of incremental transportation capacity all within the existing station boundaries. No resources will be impacted by activities conducted at the CS.

Water Dependency

As detailed in Attachment 8 (Project Description), constructing, and operating a buried pipeline is often a water-dependent activity. Considering Pennsylvania's abundant surface water and wetland resources, any linear project that travels substantial distances across the Commonwealth, using reasonable and practicable siting approaches (and even avoiding resources where possible and practicable), unavoidably requires the crossing beneath some waters and wetlands. The Project requires access, proximity to, and siting in, on, over, or under, streams and wetlands in order to achieve its primary purpose to transport natural gas in National Fuel's existing and proposed natural gas pipeline system to fixed-point interconnections with other commercial pipeline systems. Therefore, the linear nature of the overall Project, approximately 3.84 miles of replacement pipeline and 19.48 miles of new pipeline, in the geographic region as proposed, makes the Project water dependent.

Summary of Resources & Impacts

The following presents a summary of the aquatic resources impacted by the Project in Tioga County and the overall Project.

Tioga County

A total of 31 wetland areas are located within the proposed limits of disturbance (LOD) of the proposed Project in Tioga County. Of these wetlands, three will be temporarily impacted by an access road, one will be permanently impacted by an access road, one will be temporarily impacted by a cathodic groundbed installation, and the remaining 26 will be impacted by pipeline construction. In addition, a total of 56 stream areas and 26 ditch/swale areas were identified in the Project LOD in Tioga County. Although, 15 of the streams are waived from permit requirements, per Section 105.12(a)(2), as they have a drainage area of less than 100 acres, these resources have been included in the permit application but not the fee calculations (PA Code, 2024b).

All wetlands in Tioga County will be restored to pre-construction contours/elevations and will continue to support all wetland parameters (i.e., hydrology, hydrophytic vegetation, and hydric soils) and function as wetland areas. However, PADEP defines permanent and temporary impacts as follows:

- *Permanent Impacts* are those areas affected by a water obstruction or encroachment that consist of both direct and indirect impacts that result from the placement or construction of a water obstruction or encroachment and include areas necessary for the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into a watercourse, floodway, or body of water.
- *Temporary Impacts* are those areas affected during the construction of a water obstruction or encroachment that consists of both direct and indirect impacts located in, along or across, or projecting into a watercourse, floodway or body of water that are restored upon completion of construction. This does not include areas that will be maintained as a result of the operation and maintenance of the water obstruction or encroachment located in, along or across, or projecting into a watercourse, floodway, or body of water (these are considered permanent impacts). (PA Code 2024c)

Based on PADEP's definition, the acreage of vegetation cover type that will be converted due to routine vegetation maintenance within the proposed YM59 pipeline ROW in Potter County has been classified as permanent; however, all resource impacts associated with the existing Z20 pipeline ROW are classified as temporary impacts. Specifically, in accordance with the FERC Procedures, National Fuel will not conduct routine vegetation mowing or clearing over the full width of the permanent ROW in aquatic resources. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared through all emergent (PEM), scrub-shrub (PSS), and forested wetlands (PFO) at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, PFO trees within 15 feet of the pipeline (30-foot-wide corridor) with roots that could compromise the integrity of pipeline coating may be selectively cut and removed from the permanent ROW. In addition, all streams and floodways will be restored to pre-existing conditions and there will be no long-term impact to the substrate, banks, flow, aquatic/terrestrial life, or floodway. However, similar to the wetland areas National Fuel will maintain a 10-foot-wide corridor centered over the pipeline in an herbaceous state and has conservatively identified stream and floodway impacts within this 10-foot-wide

corridor along the proposed YM59 pipeline as permanent. Accordingly, the Project will permanently impact 0.767 acres (33,411 square feet [ft^2]) of wetlands, 0.070 acre (3,049 ft^2) of streams, and 1.001 acres (43,604 ft^2) of floodplains in Tioga County. The Project will also temporarily impact 4.119 acres (179,424 ft^2) of wetlands, 0.742 acre (32,321 ft^2) of streams, and 12.757 acres (555,695 ft^2) of floodplains in Tioga County. Tables S3.C-1 and S3.C-2 in Appendix B of this EA provide a detailed breakdown of the Tioga County wetland and stream/floodplain impacts, respectively.

Overall Project

A total of 45 wetland areas are located with the LOD of the proposed Project, including all areas in both Potter and Tioga counties. Of these wetlands, 3 will be entirely avoided, 5 will be impacted by temporary access roads, 1 will be impacted by a permanent access road, 1 will be impacted by the cathodic protection ground bed A, and the remaining 35 will be impacted by pipeline construction. In addition, a total of 77 stream areas and 34 ditches/swales were identified in the Project LOD. However, 1 of the streams will not be impacted and 23 of the stream areas are waived from permit requirements, per Section 105.12(a)(2), as they have a drainage area of less than 100 acres, these resources have been included in the permit application but not the fee calculations.

Based on the classification of temporary and permanent impacts described above for Potter County, the Project will permanently impact 0.797 acre (34,717 ft^2) of wetlands, 0.078 acre (3,398 ft^2) of streams, and 1.080 acres (47,045 ft^2) of floodplains. The Project will also temporarily impact 7.257 acres (316,115 ft^2) of wetlands, 1.185 acres (51,619 ft^2) of streams, and 17.391 acres (757,552 ft^2) of floodplains. Tables S3.C-3 and S3.C-4 in Appendix B of this EA provide a detailed breakdown of the total Project wetland and stream/floodplain impacts, respectively.

National Fuel has contracted Resource Environmental Solutions (RES), to develop a Permittee-Responsible Mitigation (PRM) Plan to compensate for unavoidable impacts to waters of the United States (U.S.) associated with the Project. RES has prepared a Preliminary PRM Plan for the Project (Appendix D) in accordance with the Compensatory Mitigation for Losses of Aquatic Resources Final Rule issued on April 10, 2008 as detailed in 33 CFR §332.4(c) of the Federal Register (Volume 73, Number 70).

The Final PRM Plan will detail the alternatives considered for completing compensatory mitigation, how the affected resources functions and values will be offset from the proposed compensation approach and provide detailed discussions regarding maintenance and monitoring of the PRM Site to ensure that performance standards are achieved. The Final PRM Plan will also contain detailed mapping, a final planting plan, and a formal wetland delineation report of the PRM site. An example Table of Contents for the Final PRM Plan is included in Appendix D.

Module S2: Resource ID & Characterization

S2.A Location Map & Wetland Delineation Report

The location of the Project is depicted on the Location Map in Attachment 7 of this JPA. An *Aquatic Resources Report* (ARR) for the Project was prepared in July 2024 and an October 2024 field Memorandum documenting the absence of wetlands within the new TAR-10A alignment (replacing PAR-5) are provided in Appendix A of this EA. The ARR presents the results and conclusions of wetland and stream surveys generally conducted within a 300-foot-wide survey corridor that encompassed the entire Project area. In addition, the affected aquatic resources are identified on aerial photographs in the ARR to show the location of the wetlands and stream crossings required for the Project.

S2.B Aquatic Resources

As stated in S2.A above, National Fuel identified all aquatic resources present within the Project's survey area and the results are provided in Appendix A of this EA.

Tables S2.B-1 (Wetlands) and S2.B-2 (Waterbodies) in Appendix B of this EA identify all aquatic resources located within the Project's LOD in Tioga County. The wetlands table includes the Cowardin classification, approximate crossing length at centerline, Exceptional Value status, Level 2 Rapid Assessment index, HGM classification, and proposed crossing method. The waterbodies table provides a unique identifier, the resource type, stream name, flow regime, water width, Chapter 93 classification, Level 2 Rapid Assessment index, and proposed crossing method.

S2.C PNDI or State T&E Species or Species of Special Concern Agency Coordination and Search Receipts

National Fuel submitted a PNDI query [Receipt-797684] and letters to the Pennsylvania Department of Conservation and Natural Resources (PADCNR), Pennsylvania Fish & Boat Commission (PAFBC), and Pennsylvania Game Commission (PGC) on December 15, 2023, requesting assistance in identifying any state-listed threatened, endangered, or other species of concern, state wildlife refuges/management areas, significant habitats, and other natural landscape features that may be directly or indirectly impacted by the proposed activity. Each agency responded to the December 15, 2023, inquiry and concluded that no impact was anticipated. National Fuel provided updated Project route/map information via the PNDI website on May 21, 2024, and directly to the PAFBC and PGC on May 31, 2024 (refer to Attachment 5 of this JPA).

PADCNR provided a response on December 18, 2023, and May 23, 2024, which indicated that the proposed activity is not anticipated to impact any plants, terrestrial invertebrates, natural communities, or geological features of concern.

PAFBC provided a response on December 18, 2023, and July 1, 2024 (review of updated mapping), both of which indicated that although an element occurrence of a rare, candidate, or endangered species under PAFBC jurisdiction is known from the vicinity of the proposed Project, given the nature of the proposed Project, the immediate location, or the status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern.

PGC provided a response on January 9, 2024, and June 3, 2024, which indicated that while PNDI records indicate species or resources of concern are located within the vicinity of the Project, based on the information National Fuel provided on the nature of the Project, the immediate location, and PGC's detailed resources information, no impact is likely.

In addition, National Fuel reviewed the Project area using the online United States Fish and Wildlife Service (USFWS) Information, Planning, and Conservation (IPaC) site in December 2023, which resulted in the identification of potential impacts to the following species:

- Northern long-eared bat, *Myotis septentrionalis* (Endangered);
- Tricolored bat, *Perimyotis subflavus* (Proposed Endangered);
- Northeastern bulrush, *Scirpus ancistrochaetus* (Endangered); and,
- Monarch butterfly, *Danaus plexippus* (Candidate).

National Fuel sent a Project-specific introduction letter to the USFWS on December 27, 2023. The letter provided more specific Project information and noted National Fuel's commitments related to the species identified in IPaC and requested further review and survey recommendations from the agency. National Fuel included its commitment to conduct tree clearing only in the winter months (between October 1 and March 31) to avoid impacts to protected bats and nesting birds. USFWS provided a response via email on March 13, 2024, recommending National Fuel conduct northeastern bulrush surveys. After the Project route mapping was revised and finalized, National Fuel updated its IPaC review on May 23, 2024, which resulted in a list of the same four species identified in December 2023. National Fuel then submitted updated Project route/mapping and information directly to USFWS on May 31, 2024, and reiterated its commitments pertaining to the four species (Attachment 5).

As presented in Attachment 8 of this JPA, National Fuel proactively conducted acoustic bat surveys in June 2024. The goal of the survey was to determine the presence or probable absence of the federally endangered Indiana bat (*Myotis sodalis*) and/or Northern long-eared bat (*Myotis septentrionalis*). From the results of this analysis and with the limitations of acoustic monitoring, the determination of probable presence of the Indiana bat cannot be supported, and absence of the species may be assumed. Manual review of recordings can support the presence of Northern long-eared bats within the project area, and presence of this species may be assumed. The survey also determined the candidate species Tricolored bat *(Perimyotis subflavus)* cannot be considered present. National Fuel provided a copy of the acoustic survey report to the USFWS on October 9, 2024 and will continue to work with the USFWS to determine the prudent and necessary seasonal timing restrictions along the proposed Project as it coordinates with USFWS regarding the Endangered Species Act and the Migratory Bird Treaty Act.

National Fuel also conducted surveys for northeastern bulrush in July 2024; no northeastern bulrush or other federally listed plant species were found during the botanical survey. The northeastern bulrush survey report was submitted to USFWS on August 30, 2024 and is included in Attachment 5 of this JPA. The USFWS has not yet provided a response to the survey report results; however, National Fuel will provide the DEP with a copy as soon as it is received.

S2.D Resource Classification Information; Level 2 Rapid Condition Assessment Results, Resource Function, Riparian Properties and Any Other Relevant Studies.

Based on field surveys, a total of 56 stream areas and 31 wetland areas are located in the LOD of the proposed Project in Tioga County, Pennsylvania. Tables S2.B-1 and S2.B-2 included in

Appendix B of this EA provide details regarding the specific wetland/stream type, crossing distances, and crossing methods for all water resources impacted by the Project. The following provides a description of the stream and wetland resources crossed by the Project.

Wetlands

The United States Army Corps of Engineers (USACE) and United Stated Environmental Protection Agency (USEPA) jointly define wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that in normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Wetlands generally include swamps, marshes, bogs, and similar areas (Environmental Laboratory 1987).

For an area to be defined as a jurisdictional wetland, it must, under normal circumstances, possess positive indicators of each of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology as described below.

- Hydrophytic Vegetation – The prevalent vegetation must consist of plants adapted to life in hydric soils. These species, due to morphological, physiological, and/or reproductive adaptations, can and do persist in anaerobic soil conditions.
- Hydric Soils – Soils in wetlands must be classified as hydric, or they must possess characteristics that are associated with reducing soil conditions. Hydric soils are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (Environmental Laboratory 1987).
- Wetland Hydrology – The area must be permanently or periodically inundated or have soils that are saturated to the surface for some time during the growing season.

The proposed Project will impact 31 wetland areas in Tioga County (Table S2.B-1). The YM59 Pipeline crosses 26 wetland areas including 19 PEM wetlands, 2 PSS wetland, 2 PFO wetlands, 1 PEM/PSS wetland, 1 PEM/PFO wetland, and 1 PEM/PSS/PFO wetland. The Cathodic Protection Ground Bed A crosses 1 PEM wetland. Temporary access roads YM59 TAR-10, YM59 TAR-3, and YM59 TAR-10A overlap a total of 3 PEM wetlands. Permanent access road YM59 PAR-9 overlaps W61, a PEM wetland.

Each wetland that will be crossed by the proposed Project was evaluated in accordance with 025 Pennsylvania Code § 105.17(1) (PA Code 2024b) to determine whether the wetland satisfied the requirements for classification as an Exceptional Value (EV) wetland resource. Under Pennsylvania Code § 105.17(1), EV wetlands are wetlands that exhibit one of more of the following characteristics:

i. Wetlands which serve as habitat for fauna or flora listed as "threatened" or "endangered" under the Endangered Species Act of 1973 (7 U.S.C.A § 136;16 U.S.C.A. § § 4601-9, 460k-1, 668dd, 715i, 715a, 1362, 1371, 1372, 1402 and 1531 – 1543), the Wild Resource Conservation Act (32 P.S. § § 5301 – 5314), 30 Pa.C.S. (relating to the Fish and Boat Code) or 34 Pa.C.S (relating to the Game and Wildlife Code).

ii. Wetlands that are hydrologically connected to or located within ½-mile of wetlands identified under subparagraph (i) and that maintain the habitat of the threatened or endangered species within the wetland identified under subparagraph (i).

iii. Wetlands that are located in or along the floodplain of the reach of a wild trout stream or waters listed as exceptional value under Chapter 93 (relating to water quality standards) and the floodplain of streams tributary thereto, or wetlands within the corridor of a watercourse or body of water that has been designated as a National wild or scenic river in accordance with the Wild and Scenic Rivers Act of 1968 (16 U.S.C.A. § § 1271 – 1287) or designated as wild or scenic under the Pennsylvania Scenic Rivers Act (32 P.S. § § 820.21 – 820.29).

iv. Wetlands located along an existing public or private drinking water supply, including both surface water and groundwater sources, that maintain the quality or quantity of the drinking water supply.

v. Wetlands located in areas designated by the Department as ‘‘natural’’ or ‘‘wild’’ areas within State forest or park lands, wetlands located in areas designated as Federal wilderness areas under the Wilderness Act (16 U.S.C.A. § § 1131–1136) or the Federal Eastern Wilderness Act of 1975 (16 U.S.C.A. § 1132) or wetlands located in areas designated as National natural landmarks by the Secretary of the Interior under the Historic Sites Act of 1935 (16 U.S.C.A. § § 461–467).

Based on this evaluation, none of the wetlands crossed by the Project are considered EV wetlands. Specifically, none of the wetland's support threatened or endangered species, or overlap with a wild trout stream floodplain or national wild or scenic river. The wetlands are not located along drinking water supplies and are not within "natural" or "wild" areas in State Forest or State Park land.

The Hydrogeomorphic (HGM) Wetland Classification was determined for each wetland located within the LOD of the Project in Tioga County. A majority of the wetlands were associated with freshwater stream sources and included in the R2 (Riverine lower perennial), R3 (Riverine upper perennial), FLn (Flat Mineral Soil) or R4 (Riverine intermittent) categories. The Riverine based HGM types are associated with riverine characteristics, although the overall character of their water sources differs slightly. R2 and R3 have well developed water sources, while FLn are wetlands characterized by mineral soils and water table or precipitation inputs. R2c (Riverine Floodplain Complex), R3c (Riverine Headwater Complex), and R4 consist of more intermittent sources (Brooks, n.d.). DFC (Depression Seasonal), DPh (Depression-Human Impounded), and DPx (Depression-Human Excavated) wetlands are associated with depressions.

Streams

Of the 56 streams and/or their associated floodways are located in the LOD of the Project in Tioga County (Table S2.B-2), 38 streams/floodways (20 perennial, 9 intermittent, and 9 ephemeral) will be crossed by the YM59 pipeline LOD and Cathodic Protection Ground Bed A. An additional 12 perennial, 2 intermittent, and 4 ephemeral streams will be crossed by proposed access roads. There are no ponds/lakes impacted by the Project.

Under Pennsylvania Code, Title 25, §93.3 (PA Code 2024a), surface waters are categorized into five protected use categories: aquatic life, water supply, recreation and fish consumption, special protection, and other. Surface waters classified under the aquatic life category are further divided into the following four subcategories:

- CWF – Cold Water Fishery—Maintenance and/or propagation of fish species including the family Salmonidae and additional flora and fauna which are indigenous to cold water habitat.
- WWF – Warm Water Fishery—Maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.
- MF – Migratory Fishes—Passage, maintenance, and propagation of anadromous and catadromous fishes and other fishes that move to or from flowing waters to complete their life cycle in other waters.
- TSF – Trout Stocked Fishery—Maintenance of stocked trout from February 15 to July 31, and maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat. PAFBC refers to TSF streams as Approved Trout Waters.

Based on review of eMapPA (PADEP 2024b), maintained by PADEP, and a review of Drainage List A of Pennsylvania Code, Title 25, Chapter 93, §93.3h (PADEP 2024a), the designated/protected uses and fisheries classifications for the streams/floodways impacted by the proposed Project include:

- 5 streams have a designated use of CWF,
- 7 streams have a designated use of WWF,
- 9 streams have a designated use of Drains to CWF, and
- 35 streams have a designated use of Drains to WWF.
- None of the streams are designated as high quality (HQ).

Of the 56 stream areas impacted by the Project in Tioga County, 35 have bank-to-bank crossing widths less than ten feet. A total of 15 streams have crossing widths between ten and twenty feet. A total of six streams have a crossing width greater than twenty feet. One (1) stream had the widest width at 59 feet, Stream S32 (Cowanesque River).

All intermittent and perennial streams associated with the proposed Project may provide potential habitat for seasonal spawning of game and non-game fish species, depending on the presence of suitable habitat. Additionally, these streams and their associated riparian areas may provide foraging and resting opportunities for a variety of invertebrates, reptiles/amphibians, birds and mammals. Wildlife use is most evident in stream S32 (Cowanesque River), where diving ducks, egrets, herons, and muskrats were observed actively using the river.

Although there will be no impacts to HQ or EV streams, National Fuel is voluntarily proposing to plant up to a 50-foot-wide riparian buffer on each side of streams in areas that supported scrub-shrub/forested vegetation prior to construction. With landowner approval, the riparian area (i.e., areas within 50 feet landward of the streams) located within the LOD will be planted, except for a 30-foot-wide corridor centered over the pipeline. Riparian areas that will be crossed by the proposed Project currently support a variety of cover types in the Project LOD. Specifically, the proposed Z20 Replacement Pipeline parallels and overlaps the existing Z20 right-of-way (ROW) and riparian areas within the existing ROW consist primarily of upland and wetland herbaceous/emergent vegetation as well as scrub-shrub wetlands. The YM59 Pipeline will require

creation of new ROW through agricultural lands, fallow fields, shrub land, and forested land. Riparian areas located in Potter County along the proposed new YM59 Pipeline ROW consist of upland forested habitat and agricultural land.

All streams impacted by the proposed Project will be restored to their original conditions: there will be no change to their substrate, flow regime, or banks. Forested/scrub-shrub riparian areas will be replanted (refer to Figure S4.B in Appendix C of this EA), with the exception of a 30-foot-wide corridor, which will be maintained in herbaceous cover.

Pennsylvania Riverine Condition Level 2 Rapid Assessment Results

An evaluation of the 35 perennial and intermittent streams located with the Project LOD in Tioga County was conducted in accordance with Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocols (PADEP, 2016a): completed data forms are included in the ARR (Appendix A of this EA). The Riverine Condition Index Scores ranged from 0.24 to 0.94 (Table S2.B-2) with an average of 0.65, and are briefly described/summarized below:

- Channel/Floodplain condition scores were generally high, with erosion of banks as the main problem for streams with lower scores.
- Riparian Vegetation and Riparian Zone of Influence (ZOI) scores were lowest of the five categories (with an average score of 0.54 for both), likely due to the high percentage of agricultural land cover within those areas.
- Instream Habitat scores averaged 0.68, though had a largest variance with the min and max between 0 and 1, respectively. The main issues identified as lack of varied substrates and canopy cover.
- Channel Alteration (average score of 0.77) though had a largest variance with the min and max between 0 and 1, respectively. The issues were associated with existing culverts and channelization identified in a few locations.

The 31 wetland areas impacted by the Project in Tioga County were also evaluated in accordance with the Pennsylvania Wetland Condition Level 2 Rapid Assessment Protocols (PADEP, 2016a): completed data forms are included in the ARR (Appendix A of this EA). Overall Condition Scores ranged from 0.58 to 0.90 (Table S2.B-1) with an average of 0.78, and are briefly described/summarized below:

- Wetland ZOI scores were the lowest of the six categories assessed, likely due to the prevalence of developed/agricultural land in the area.
- Roadbed Presence scores were affected by the number and proximity of roads within the ZOIs, especially the country roads that cross the Project area.
- Vegetation Condition Index scores were affected by clearing of the ROW, agricultural fields, and/or occasionally the presence of invasive species.
- Hydrologic Modifications had an average score of 0.86 as most wetlands had two or fewer stressors.
- Sediment Stressors and Water Quality both had the highest scores 0.91 and 0.92 respectively; most scored 0.7 or higher with most detractions due to erosional effects.

Module S3: Identification and Description of Potential Project Impacts

S3.A Impact Summary

Table S3.A-1 identifies the proposed temporary and permanent direct and indirect impacts for each resource type affected by the Project in Tioga County and overall.

Table S3.A-1 Summary of Project Impacts

Resource Category	Temporary Impacts		Permanent Impacts	
	Direct[a] (ft^2 / Acres)	Indirect[b] (ft^2 / Acres)	Direct[c] (ft^2 / Acres)	Indirect[d] (ft^2 / Acres)
Tioga County				
Streams	1,220 / 0.028	31,101 / 0.714	0 / 0.0	3,049 / 0.070
Wetlands	7,404 / 0.170	172,018 / 3.949	85 / 0.002	33,325 / 0.765
Floodway	85,465 / 1.962	470,230 / 10.795	0 / 0.0	43,604 / 1.001
Tioga County Totals	**94,090 / 2.160**	**673,349 / 15.458**	**85 / 0.002**	**79,978 / 1.836**
Overall Project				
Streams	1,220 / 0.028	50,399 / 1.157	0 / 0.0	3,398 / 0.078
Wetlands	7,972 / 0.183	308,143 / 7.074	85 / 0.002	34,630 / 0.795
Floodway	95,048 / 2.182	662,504 / 15.209	958 / 0.022	46,087 / 1.058
Project Totals	**104,240 / 2.393**	**1,021,046 / 23.440**	**1,043 / 0.024**	**84,115 / 1.931**

a Temporary direct impact consists of culvert installation associated with installing culverts on the temporary access roads, and crossings of wetlands and floodways by the temporary access roads.
b Temporary indirect impacts include all construction disturbance outside the maintained ROW. Refer to Tables S3.C-1 through S3.C-4 in Appendix B of this EA.
c Permanent direct impacts consist of areas of fill: wetland W61 (Tioga County) has permanent fill along an access road and part of the floodplain of S73z (Potter County) will be filled due to the valve setting on the Z20 Replacement Pipeline (milepost 0.0).
d Permanent indirect impacts consist of the areas within the maintained permanent pipeline ROW. Refer to Tables S3.C-1 through S3.C-4 in Appendix B of this EA.

S3.B Standard Information Responses

Based on review of available natural resource databases as well as publicly available state and federal resources/mapping, the Project is not located within or adjacent to the following areas:

- Natural Heritage Areas;
- National, State or Local Parks, Forest or Recreation Areas;
- National Natural Landmarks;
- National Wildlife Refuges or Federal, State, Local or Private Wildlife or Plant Sanctuaries;
- State Game Lands;
- Source of a Public Water Supply;
- National Wild or Scenic River or the Commonwealth's Scenic Rivers System; or
- Designated Federal Wildness areas.

The proposed Project will temporarily disturb approximately 17.58 acres of Prime Farmland, including 17.03 acres in Tioga County. Construction of the pipeline will involve temporary disturbance of 10.14 acres but will not convert Prime Farmland to developed areas; these areas will be restored, and the Project will not preclude these soils from being farmed if desired. Construction and modifications to aboveground facilities and access roads will disturb approximately 7.44 acres of Prime Farmland soils. Overall, approximately 5.42 acres of Prime Farmland soils are associated with permanent Project impacts (i.e., permanent access roads or aboveground facilities) in Tioga County, but none of this area is currently under active cultivation and is either forested or developed.

Precautions will be taken during construction and restoration to protect these special soils. In particular, National Fuel will implement its Erosion and Sediment Control and Agricultural Mitigation Plan and a Project-specific Erosion and Sedimentation Control Plan (Attachment 11 of this JPA) to prevent and minimize adverse impacts on agricultural productivity. Topsoil will be segregated during construction and replaced with topsoil on top of subsoil during restoration, and the soil will be decompacted as necessary following construction.

S3.C Subfacility Details

All aquatic resources located within the LOD in Tioga County are identified in the resource tables included in Appendix B of this EA. Specifically, these tables detail the encroachment activities, identifiers, subfacility codes/descriptions, resource identifiers, proposed temporary and permanent impacts, latitude and longitude, and subfacility details for all resources.

S3.D Direct and Indirect Impacts

Tables provided in Appendix B of this EA thoroughly identify and quantify the aquatic resource impacts for Tioga County and the overall Project. The following sections describe the Project impacts during construction as well as long-term maintenance and operation activities associated with the regulated resources.

Streams

National Fuel plans to install the pipeline beneath all waterbodies in Tioga County using a trench excavated dry crossing method (i.e., dam and flume or dam and pump) or trenchless Horizontal Directional Drill (HDD). In the event the preferred crossing method or location along the primary route described in this filing is determined to be infeasible, National Fuel may opt to select an alternative crossing technique in consultation with the permitting agencies. Crossing methods for this Project will consist of the methods described below.

Dry Stream Crossing Methods:
This crossing method involves in-stream trench excavation and utilizes either a dam and pump or flume apparatus to isolate the workspace within the stream during the pipeline installation process. The selection will be determined in the field at the time of crossing by the contractor and National Fuel's Environmental Inspector. The method selected will be that method which provides the least disturbance and most expedient crossing to minimize overall impact.

Dam and Pump Stream Crossing Method – A dam and pump crossing is a dry crossing technique that involves construction of a dam on the upstream end of the trench work area from which a pump and pipe or hose are used to convey stream flow around the work area and discharge the water downstream of the work area. The dam and pump allow for a dry trench workspace area

and is often used in streams with curved or meandering channels where effective placement of a straight flume pipe is not feasible. The dam and pump method shall be used only where there are no concerns about sensitive (aquatic) species passage in the waterbody. Key considerations of this method involve ensuring that the pumps used are sufficient to handle the flow, back-up pumps are onsite in the event of malfunctions, pump intakes are screened, and pump operation is monitored throughout their use to prevent streambed scour at the discharge point and ensure proper operation.

Flume Stream Crossing Method – Like the dam and pump method, the flume crossing method allows for a dry trench workspace area and uses upstream/downstream dams to isolate the stream workspace. A flumed crossing involves measures that direct the stream flow through one or more culvert(s) or flume pipe(s) across the trench line work area. This allows for the trenching, pipe installation, and initial restoration to occur in dry (non-flowing) conditions, under the flume set-up, while maintaining continuous downstream flow. Soil characteristics must be stable and stream flow should be low to moderate for this method to be used successfully and safely. The flume pipe(s) must be long enough to account for the possibility of the trench widening unexpectedly during the excavation (due to sloughing). An effective seal must be created around the flume(s) so that water will not penetrate and possibly wash out the in-stream dam on both the inlet and outlet end. Once in place, the flumes should not be removed until the pipeline has been installed and the streambed and banks have been restored.

Horizontal Directional Drill (HDD):
For this type of crossing, a specialized drill rig is used to advance an angled borehole below the stream to be crossed and, using a telemetry guidance system, the borehole is “steered” beneath the stream and then back to the ground surface. The hole is then reamed to a size adequate for the pipe to pass through, and the pipeline is then pulled back through the bore hole. This method may provide the maximum protection to surface water bodies, but requires significant surface disturbance for site access, drilling and support equipment, water storage, and drill mud mixing. In addition, it requires that noise and traffic impacts be addressed. This method is being proposed for the pipeline crossing at the Cowanesque River (S32).

Prior to selection of this technique, geotechnical studies were completed and engineering analysis of that data along with bend radius and acceptable pipeline stresses were performed (refer to Attachment 21 of this JPA). Following these investigations, National Fuel developed specific, detailed plans, including entry and exit pad locations and size, site-specific plans (to scale) with areas of disturbance and contingency mitigation measures to contain and clean up inadvertent release of drilling mud (in case of occurrence). Use of HDD would not be time-restricted given it involves no work within or impact to the streambed or stream banks.

Open-Cut Stream Crossing Method:
If a stream is dry or has no perceptible flow at the time of construction, an open-cut crossing method will likely be used. For open-cut crossings, a backhoe, clam dredge, dragline, or similar equipment will be used for trench excavation. As a rule, the completion of all construction activities should not exceed 24 hours at minor stream crossings (i.e., less than or equal to 10 feet wide at water’s edge at time of crossing) and 48 hours at intermediate stream crossings (i.e., greater than 10 feet wide but less than or equal to 100 feet wide at the water’s edge at the time of crossing). The pipe will be welded together in the staging areas and then carried or floated along the ROW into place. If the streambed is composed of unconsolidated material, the pipe will be pulled into place. In rock-bottomed streams, the pipe will be floated or lifted across, and then lowered into

place. After the pipe is lowered into the trench, previously excavated material will be returned to the trench line for backfill, streambeds will be restored to their former elevations and grades, and all stream banks will be restored and stabilized with erosion controls.

To limit the time required for construction of a trenched stream crossing, the ROW will be prepared on either side of the stream and the pipeline segment will be fully welded prior to the construction of the actual crossing. Stream crossings will be perpendicular to the flow, to the extent practical. If necessary, the pipe used for stream crossings and in floodplains will be weighted to prevent flotation. Stream flow will always be maintained at waterbody crossings, and no alteration of the stream's capacity is anticipated because of pipeline construction.

Spoil, debris, pilings, cofferdams, construction materials, and any other obstructions resulting from or used during construction of the pipeline will be removed to prevent interference with normal water flow and use. Following grading, all stream banks will be restored to prevent subsequent erosion, in accordance with permit requirements.

Construction of the proposed Project across waterbodies will result in minor, short-term impacts. These impacts will occur as a result of temporary in-stream dam placement, trench excavation and backfill activities, temporary bridge placement, or construction on slopes adjacent to stream channels. These activities may result in a temporary localized increase in turbidity levels and downstream sediment deposition. Sedimentation and turbidity may occur as a result of in-stream construction, trench dewatering, and soil erosion along the construction ROW. In slack or slowly moving waters, increases in suspended sediment may increase the biochemical oxygen demand and reduce levels of dissolved oxygen in localized areas during construction.

Motile organisms may avoid these areas, but sessile and planktonic organisms may be adversely affected. Suspended sediments can also alter the chemical and physical characteristics of the water column (e.g., color and clarity) on a short-term basis. However, no foreign sediments will be introduced to the waterbodies as all dredged or fill material will consist of onsite sediments. Furthermore, erosion and sediment control measures will be installed and maintained in accordance with National Fuel construction best management practices (BMPs) to minimize impacts on wetlands and waterbodies.

Indirect impacts to fish spawning/migration could occur if substantial changes to stream substrate or current patterns result from the proposed Project construction. However, substantial changes to stream substrate and current patterns are not anticipated because the native stream substrate will be replaced, and stream bed and banks will be restored as closely as possible to the original contours following construction. No impacts to fish spawning/migration are anticipated during Project operations.

All streams impacted by the proposed Project will be restored to their original physical conditions: there will be no change to their substrate, flow regime, or banks. Forested/scrub-shrub upland and wetland riparian areas will be replanted with landowner approval, with the exception of a 30-foot-wide corridor within the 50-foot-wide permanent ROW, which will be maintained in herbaceous cover (refer to Module S4 of this EA).

Aboveground facilities have been specifically sited to avoid floodways of the waterbodies impacted by the proposed Project in Tioga County.

Overall, the impacts to waterbodies crossed during construction will be minor, temporary, and short-term in nature, and all waterbody crossings will be restored to their preconstruction condition

and water quality. As such, no long-term impacts to waterbodies impacted by the proposed Project are anticipated.

Wetlands

Although National Fuel was prudent in situating the new pipeline route and worksites to avoid wetlands to the extent practicable, however due to the number and landscape position of wetlands and other routing factors, crossing of the wetlands is necessary.

For disturbances that occur within the existing ROW of the Replacement Pipeline with herbaceous cover, recolonization of disturbed ground by annual and perennial species will occur and is characteristically rapid, occurring within one growing season. Therefore, most impacts to wetland vegetation resulting from pipeline construction of the proposed Project are expected to be minor and short-term.

Some PFO and PSS wetlands will be impacted, with some of those impacts resulting in permanent vegetation cover type conversion. Wetlands within the permanent ROW area that are currently forested, in which forest vegetation will be cleared for creation of a ROW for the Project, will likely become PEM or PSS wetlands due to clearing and repeated mowing. Similarly, wetlands within the permanent ROW area that are currently scrub-shrub cover types that will be mowed will likely become PEM wetlands due to repeated mowing. Wetlands in the temporary construction ROW and extra workspace areas will be allowed to revegetate to preconstruction conditions (including forest) when construction is complete.

Wetland Construction Procedures:
National Fuel will ensure that construction-related impacts to wetlands are kept to a minimum and will adhere to the following Federal Energy Regulatory Commission (FERC) standard conventional wetland crossing procedures:

- Vegetation will be cut off at ground level, leaving existing root systems intact, and the cut vegetation will be removed from the wetlands for disposal. Vegetation disturbance will be kept to the minimum practicable.
- Pulling of tree stumps will be limited to that area directly over the trench, to the travel lane, and other areas where construction safety would be compromised by intact stumps. .
- National Fuel will use prefabricated timber mats (up to two layers) within the work area to stabilize the ROW in saturated soils.
- All prefabricated equipment pads, and geotextile fabric will be removed upon completion of construction, except for permanent access roads.
- The top 12 inches of topsoil from the trench will be segregated and then returned to its original position on top of the trench, except in areas where tree roots and stumps, standing water, or saturated soils prevent this.
- Sediment barriers will be installed and maintained at the edge of all wetlands until upslope ROW revegetation is completed. Permanent slope breakers will be installed at the base of all slopes adjacent to wetlands.

- Permanent trench breakers will be installed at the point where the trench enters and exits the wetland to help preserve the wetland's hydrologic characteristics and to control sediment discharges into the wetlands.

- Backfilling of the trench within the wetlands will be performed in such a manner that excess backfill will be removed from the ROW, and that the wetlands will be returned, to the extent possible, to original contours and flow patterns. Drainage ditches, terraces, roads, and fences will be restored to their former condition.

Construction in Wetlands with Unsaturated Soils – The construction technique used to cross wetlands with stable, unsaturated soils at the time of construction will be the same as that used in dry upland areas. Soils may be dry and stable enough to support equipment without additional timber mat/riprap equipment support, and pipe may be strung along the ROW on skids through the wetland.

Vegetation will be cut just above ground level leaving root systems in place. Pulling of tree stumps will be limited to the trench line area and travel lane, and where required to ensure safe operation of construction equipment. Wetland topsoil will be segregated from subsoil in the trench line area and stored in separate piles while the trench is open. The segregated soils will be backfilled in the proper order, with topsoil on top, and the preconstruction surface contours will be restored. Trench breakers will be placed in the trench at the base of slopes near the wetland boundaries prior to backfilling to prevent draining of the wetland along the trench line. No upland soil or fill material will be backfilled or imported into the wetland. The wetland will be seeded with a native wetland seed mix to establish wetland vegetation cover while also allowing the wetland's native seed and rhizomes (contained in the topsoil) to reestablish dominance over time. No lime, fertilizer, or mulch will be applied in wetlands.

Construction in Wetlands with Saturated Soils – In wetlands with wet, saturated soils at time of construction, topsoil will be segregated over the trench line if possible. Construction in saturated wetland areas may involve either the "drag section" or the "push/pull" technique.

- The drag section technique involves equipment carrying a prefabricated section of pipe into the wetland for placement into the excavated trench if soil conditions permit. This technique requires the installation of equipment support along the working side of the trench to provide a stable work surface and minimize soil disturbance and rutting. Clean-up and restoration procedures will be like those previously described for wetlands with unsaturated soils with the additional step of removing the equipment support from the wetland.
- The push/pull technique is one that is generally used only in wetlands with standing water or soils that are saturated to the surface. The trench may be excavated using either a backhoe (working on equipment support in the wetland) or a dragline or clamshell dredge (working either in the wetland or from the edge of the wetland, depending on wetland size and extent of soil saturation). A prefabricated pipe is pushed from the edge of the wetland and/or pulled (e.g., with a winch) from the opposite bank of the wetland into the excavated trench. Floats may be attached to the pipe to give it positive buoyancy, allowing it to be "floated" into place over the excavated trench. Once the pipe is positioned, these floats will be removed, and the pipe will settle to the bottom of the trench and the trench will then be backfilled. The push/pull technique enables the pipeline to be installed with minimal equipment operating in the wetland.

Temporary construction impacts in wetlands may include loss of herbaceous, shrub, and tree vegetation; wildlife habitat disruption; soil disturbance associated with grading, trenching, and stump removal; sedimentation and turbidity increases; and hydrological profile changes. To minimize vegetation disturbance, National Fuel will limit the construction ROW width to 75 feet or less in wetlands. To minimize impacts to wetlands, National Fuel will implement erosion and sediment control measures to prevent soils disturbed by construction activities from leaving the construction area and entering wetlands. In addition, National Fuel will implement spill prevention and response procedures to avoid impacts from refueling of equipment and fuel storage within the vicinity of wetlands.

Confining stump removal in wetlands to the trench line and travel lane (unless safety or access considerations require stump removal) will minimize soil disturbance and retain sources for re-sprouting and re-growth of wetland vegetation. Erosion control techniques, including deployment of silt fences, slope breakers, trench plugs, riprapping, terracing, netting, restoration, and revegetation will be used in upland areas to restrict sediment runoff into adjacent wetlands.

Preconstruction wetland conditions in the temporary workspace will be restored to the extent possible to promote revegetation by natural succession. Trench line topsoil segregation in unsaturated wetlands will preserve the native seed source, which will facilitate regrowth of herbaceous vegetation once pipeline installation is complete. In addition, wetlands will be restored and allowed to revert to naturally indigenous vegetation. The revegetation process will be monitored periodically. If excessive erosion occurs, these areas will be stabilized and revegetated.

To facilitate periodic corrosion and leak surveys, routine vegetation maintenance clearing will not be done more frequently than every three years; however, a corridor not exceeding 10 feet in width centered over the pipeline may be maintained annually in an herbaceous state. In addition, trees within 15 feet of the pipeline with roots that could comprise the integrity of the pipeline coating may be selectively cut and removed from the ROW. Routine vegetation maintenance clearing will be avoided between April 15 and August 1 of any year.

Aboveground facilities and permanent access roads have been specifically sited to avoid wetlands in Tioga County to the extent possible; however, wetland W61 is crossed by PAR-9 and approximately 0.0017 acre (77 square feet) of permanent fill will be required. In addition, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared through all wetlands (PEM, PSS, PFO) at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, PFO trees within 15 feet of the pipeline (30-foot-wide corridor) with roots that could compromise the integrity of pipeline coating may be selectively cut and removed from the permanent ROW. Therefore, there will be a permanent conversion of PSS and PFO cover type within the pipeline ROW that will be maintained in herbaceous (PEM) cover and selectively cut. As such, compensatory mitigation for permanent conversion impacts through forested and scrub-shrub wetlands has been developed for the Project (refer to Module S4 and Appendix D of this EA).

S3.E Antidegradation Analysis

This Antidegradation Analysis discussion has been prepared in accordance with 25 Pa. Code § 105.14(b)(11) (PA Code 2024b). Specifically, National Fuel's Joint Permit Application for a Pennsylvania Water Obstruction and Encroachment Permit Application and USACE Section 404 Permit Application is needed to ensure consistency with State antidegradation requirements

contained in Chapters 93, 95, and 102 (relating to water quality standards; wastewater treatment requirements; and erosion and sediment control) and the Clean Water Act (CWA).

PADEP has implemented an Antidegradation Program to promote the maintenance and protection of existing water quality for High Quality (HQ) and Exceptional Value (EV) waters, and the protection of existing uses for all surface waters (PADEP 2024a). The Project will not impact any EV wetlands and only 1 HQ-CWF stream (S55) located in Potter County at the existing Ellisburg Compressor Station will be crossed at an existing, culverted access road. No other streams were identified as draining to HQ-CWF waters. As such the antidegradation requirements for this permit application are limited to the existing instream water uses and the level of water quality necessary to protect the existing uses of the streams and wetlands. Table S.3.E-1 provides an Antidegradation Analysis based on each applicable section of the Pennsylvania Code and the Clean Water Act.

Table S3.E-1 Antidegradation Analysis

Regulations/Requirements	Compliance Analysis
PA Code Chapter 93 (Water Quality Standards)	
Section 93.4a – Antidegradation Requirements - ***93.4a(b) Existing use protection for surface waters.*** **Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.** - ***93.4a(c) - Protection for High Quality Waters*****—The water quality of High Quality Waters shall be maintained and protected, except as provided in § 93.4a(c)(b)(1)(iii) (relating to implementation of antidegradation requirements).** - ***93.4a(d) - Protection for Exceptional Value Waters—The water quality of Exceptional Value Waters shall be maintained and protected.***	Section 93.4a(b) – Antidegradation Requirements: Per Chapter 8 (PADEP's Test for Non-Degradation of Water Quality) of the PADEP Antidegradation Implementation Guidance (PADEP 2003), the assessment of whether or not a discharge "will affect water quality is directly related to the technical and scientific ability to discern whether a change in stream quality will take place as a result of the discharge", and that the minimum scientific data set used to establish a change in water quality consists of 24 water samples collected over a 12 month period. Through implementation of the selected route, erosion and sediment control measures, and the Project's Avoidance, Minimization, and Mitigation Procedures, the Project will protect and maintain existing/designated stream uses and water quality. Specifically, National Fuel has limited the land disturbance to the excavated trench line, and temporary minor grading of the stream banks at the travel lane crossing, as required; limited the time/duration of in-stream construction (typically less than 2 days); designed all crossings such that the pipelines will a minimum of 3 feet of cover under wetlands and 5 feet of cover under streams, consistent with PADEP, PHMSA, and FERC depth requirements; and, implemented erosion and sediment control measures for all land disturbances in accordance with PADEP's Erosion and Sediment Pollution Control Program Manual (PADEP 2012) as demonstrated throughout the Project's Erosion and Sedimentation Control Permit applications. With the proper implementation and maintenance of these protective measures, construction-related Project impacts to water quality such as increased turbidity related to sedimentation and in-stream construction will be minor, temporary, and localized and will not adversely impact or degrade the water resources. Specifically, the water quality and designated/existing uses will be maintained and protected post-construction. National Fuel will manage stormwater runoff associated with construction so that there will be no direct discharge to water resources in the Project area and no net increase in post-

Regulations/Requirements	Compliance Analysis
	construction runoff. Please refer to Attachment 11 of this Joint Permit Application for detailed plans depicting the E&S measures and BMPs for Project implementation to ensure reduced potential for erosion and sedimentation to water resources. With implementation of the above, the Project will protect and maintain the existing/designated stream uses and water quality of the 1 HQ-CWF stream. The E&S measures, BMPs, and the avoidance and minimization measures will protect and maintain the overall water quality of the water resources from nonpoint source discharges associated with the Project.
Section 93.4c – Implementation of Antidegradation Requirements - ***93.4c(a)(2): Existing Use Protection. Endangered or threatened species. If the Department has confirmed the presence, critical habitat, or critical dependence of endangered or threatened Federal or Pennsylvania species in or on a surface water, the Department will ensure protection of the species and critical habitat.*** - ***93.4c(b)(1): Protection of HQ and EV Waters. Point source control.*** - ***93.4c(b)(2): Protection of HQ and EV Waters. Nonpoint source control. The Department will assure that cost-effective and reasonable best management practices for nonpoint source control are achieved.***	National Fuel has coordinated with Federal and State agencies to identify and ensure protection of endangered and threatened species and/or their critical habitat, or dependence on the surface waters crossed by the Project. As presented in the Project Description and PNDI Review summary (located in Attachment 8) the Project will not adversely affect any protected species. The proposed Project does not involve the construction/installation of any permanent point source discharges directly into HQ and EV waters. Similarly, there will be no nonpoint source discharge to an HQ or EV water resource.
Section 93.6 - General Water Quality Criteria	Chapter 93.6 states that a project will not introduce/discharge any substance "in concentrations or amounts sufficient to be inimical or harmful to the water uses to be protected or to human, animal, plant, or aquatic life," including actions that could produce turbidity. The proposed Project will result in minor, temporary, and localized impacts to surface waters of the Commonwealth primarily associated with increased turbidity during construction activities. The Project does not involve any permanent structures/facilities that will discharge any treated or created industrial wastewater, nor will it alter the existing natural conditions (chemical, biological, or physical) of the water resources crossed by the Project. In addition, the Project does not involve the addition or discharge of any toxic (Section 93.8a) or harmful substances into the waters of the Commonwealth. All water resources will be restored to their pre-existing contours/elevations and conditions following Project construction such that their designated or existing water uses are not adversely affected by the Project. Accordingly, the proposed Project does not have the potential to alter water quality such that existing water uses or aquatic life will be affected.

Regulations/Requirements	Compliance Analysis
PA Code Chapter 95 Wastewater Treatment Requirements	
The Project does not involve the discharge of industrial waste or of waters polluted by abandoned coal mines subject to effluent standards and limitations and treatment requirements. In addition, the Project would not add new or expanded mass of Total Dissolved Solids (TDS) to waters of the Commonwealth. The Project is exempt from treatment requirements for new and expanding mass loadings of TDS (25 Pa. Code § 95.10) as the temporary turbidity associated with the Project's stream crossings will result in significantly less discharge loadings than the exempted amount of "TDS equal to or less than 5,000 pounds per day, measured as an average daily discharge over the course of a calendar year, otherwise known as the annual average daily load" (25 Pa. Code § 95.10a[7]).	
PA Code Chapter 102 Erosion & Sediment Control	
Section 102.4b(6) - E&S Control Requirements - ***102.4b(6)(i): Evaluate and include nondischarge alternatives in the E&S plan, unless it can be demonstrated that nondischarge alternatives do not exist for the project.*** - ***102.4b(6)(ii): If the project makes the demonstration in subparagraph (i) that nondischarge alternatives do not exist for the project, the E&S Plan must include ABACT.*** ***Section 102.8h - Post Construction Stormwater Management Requirements*** - ***102.8h(1): Evaluate and include nondischarge alternatives in the PCSM plan, unless it can be demonstrated that nondischarge alternatives do not exist for the project.*** - ***102.8h(2): If the project makes the demonstration in paragraph (i) that nondischarge alternatives do not exist for the project, the PCSM Plan must include ABACT.***	National Fuel has evaluated and incorporated a number of design and construction alternatives into the Project to minimize the potential for temporary accelerated erosion and sedimentation during construction, and to achieve zero net change in runoff between the pre- and post- construction conditions. In addition, National Fuel has also evaluated non-discharge alternatives in Attachment 11 (E&S Plans). Specifically, the Project will incorporate Low Impact Development (LID/BSD) and structural geogrid to reduce the curve number value and restore disturbed areas to meadow in good condition to eliminate the net change in rate, volumes, and water quality after construction. For the Chapter 93 classification of Rose Lake Run (HQ-CWF) in Potter County, ABACT E&S BMPs will be implemented as part of the Project.
Section 102.5a - Permit Requirements	As previously noted, the Project will use BMPs in accordance with Antidegradation Requirements in 102.4b(6) and 102.8(h).
Section 102.14 – Riparian Buffer Requirements	Although there will be no impacts to HQ or EV streams, National Fuel is proposing to plant up to a 50-foot-wide riparian buffer on each side of all streams in areas that supported scrub-shrub/forested vegetation prior to construction. The entire LOD will be planted, except for a 30-foot-wide corridor centered over the pipeline. In addition, National Fuel will restore streambanks to a stable condition similar to pre-construction conditions.
U.S. Clean Water Act	
Section 301 – Effluent Limitations	Please refer to the discussion regarding compliance with Section 93.4(c)
Section 302 – Water Quality Related Effluent Limitations	The Project does not involve any industrial wastewater point source discharges; therefore, this section is not applicable.

Regulations/Requirements	Compliance Analysis
Section 311 – Oil & Hazardous Substance Liability	Construction and operation of the Project will have some inherent risk or potential for leaks/spill to impact waters of the Commonwealth. Therefore, to prevent, minimize, and control any accidental spill of hazardous materials such as fuels, lubricants, and solvents during project construction and operation, National Fuel will implement their Prevention, Preparedness, and Contingency (PPC) Plan (Attachment 18) which will include BMPs to be implemented in the event of an accidental release of oils or chemicals, notification requirements during construction of the Project (in accordance with Section 311 of the CWA). These measures include but are not limited to locating refueling and servicing of equipment in upland locations at least 100 feet from the edge of the nearest waterbody or wetland as achievable; and the storage of fuels, lubricants, and other materials at least 200 feet from active private wells and at least 400 feet from municipal wells. Construction equipment, vehicles, materials, hazardous materials, chemicals, fuels, lubricating oils, and petroleum products will not be parked, stored, or serviced within 100 feet of all waterbodies and wetlands. In addition to the above, National Fuel will ensure adequate supplies and equipment are available on-site to respond to immediate containment and clean-up of inadvertent spills on all construction spreads. In the event a spill is too large for immediate cleanup, National Fuel has contracted with several response contractors to contain, remove, and/or respond to a spill or leak.
Section 316 – Thermal Discharges	The Project will not involve discharge of any heated effluents or modification of the temperature of any stormwater runoff. Therefore, the Project will not adversely impact the post-construction viability of the water resources to support aquatic life at the same levels as pre-construction conditions.
Section 401 – Permits & Licenses	National Fuel is currently requesting a Section 401 WQC for this Project concurrently with this Chapter 105 application.
Section 402 – National Pollutant Discharge Elimination System	National Fuel is preparing a modification to its NPDES/PAG-10 permit for discharge of the Project's hydrostatic test waters.
Section 404 – Permits for Dredged or Fill Material	Section 404 of the CWA is regulated through the JPA Program between PADEP and the USACE. Therefore, this Chapter 105 JPA has been prepared in accordance with Section 404 of the CWA. Accordingly, National Fuel will comply with Section 404 of the CWA as permitted through and in accordance with permit conditions of approval through the JPA.

S3.F Alternatives Analysis

National Fuel conducted an analysis of potential alternatives, ranging from the broadest evaluation of no-action and system alternatives to the detailed evaluation of route variations. Pipeline routing and aboveground facility siting options were evaluated based on regional topography, potential adverse environmental impacts, population density, existing land use, and construction safety and feasibility considerations. National Fuel also considered feedback and input received from the public and affected landowners throughout the planning process. National Fuel has endeavored to locate the pipeline within, adjacent to, or parallel to existing utility corridors where practicable and feasible.

No Action Alternative

The No-Action Alternative involves consideration of the potential benefits and adverse impacts if the proposed Project were not approved and constructed. If the Project were not constructed, the potential environmental impacts associated with construction and operation of the Project would not occur. However, the stated purpose of the Project (i.e., transportation of low-cost Marcellus and Utica Shale production to United States and Canadian markets, along with modernization of National Fuel's older vintage infrastructure) would not be met. Therefore, for the reasons discussed below, the No-Action Alternative was not considered acceptable.

The No-Action Alternative would require the existing 3.84-mile section of the Z20 Pipeline proposed for replacement to remain in service. This section of pipeline is comprised of 1936 vintage bare steel pipe and is reaching the end of its useful lifespan. For long-term reliability and safety reasons, it is advantageous to replace the pipe as part of the Project. The replacement pipeline would utilize modern pipe materials, coating, and construction installation techniques, thereby enhancing the integrity of the pipeline system and reducing safety and reliability risks for many decades to come. This component of the Project minimizes environmental impacts, and the No-Action Alternative would prevent National Fuel from implementing needed system upgrades that would improve the integrity, reliability, and safety of the pipe.

In addition, the No-Action Alternative would not provide for the transport of low-cost gas supplies from the Marcellus and Utica shales in the abundant production area in Tioga County, Pennsylvania into the interstate pipeline system grid via the proposed 19.48-mile YM59 Pipeline. Consequently, the No-Action Alternative would force the Project Shipper to seek other future pipeline expansion projects with unpredictable schedules, undetermined environmental impacts, and uncertain economics, as there are no known alternative pipeline systems with adequate capacity to move Shipper volumes into the required Project delivery points. In addition, as discussed herein, while the development and implementation of additional energy conservation measures may have some effect on regional energy demand, these measures alone are not expected to eliminate the need for the Project in the short- or long-term. Accordingly, without the proposed Project, customers in United States and Canadian markets would have fewer available, and potentially more expensive, options for obtaining natural gas supplies in the near future.

In summary, the No Action Alternative does not meet the purpose and need of the Project; therefore, it is not practical and provides no advantage over the proposed Project.

System Alternatives

Technical and feasible system alternatives were evaluated in terms of their ability to meet the Project objective, which was defined by the service contracted for by the market. The Project

objective, as defined by the market supporting full subscription of the 190,000 Dth/day of year-round incremental firm capacity, is to provide firm transportation service from the Marcellus and Utica Shale region in northeastern Pennsylvania (Tioga County) to downstream delivery points with other interstate pipelines, which reach various end-use markets and demand centers in the United States and Canada.

Third-party interstate natural gas pipeline alternatives were evaluated and determined to be infeasible. Specifically, although Tennessee Gas Pipeline Company, LLC and Transcontinental Gas Pipe Line Company, LLC have pipeline systems in the Tioga County area, neither system has both proximity to the Project customer's producing area and the ability to replicate the service (delivery points) being provided by the Project. It is expected that both systems would require similar if not more extensive facilities than those proposed by National Fuel as part of the Project to provide the proposed level of service.

National Fuel is unaware of other pipeline companies that have submitted a filing to the FERC proposing a similar project that could provide equivalent firm transportation service. Furthermore, there is no current potential for system or co-located direct routes that meet the Project's requirements other than those presented by National Fuel.

Route Alternatives

National Fuel evaluated routing opportunities for the proposed pipeline alignment as part of the planning and design process for the Project. The analysis for the major alternative pipeline routes was based on environmental and land use impacts, as well as permanent easement acquisitions and overall Project costs. Existing publicly available data including aerial photography, topographic maps, National Wetland Inventory (NWI) maps, U.S. Geological Survey quadrangle maps, and parcel maps/attributes were incorporated into a project-specific geographic information system (GIS) geo-database used for initial study of routing opportunities. Limited field reconnaissance from publicly accessible areas (mainly roadway crossings) was conducted to further evaluate some routing opportunities. The intent was to identify the most environmentally, technically feasible, and cost-effective pipeline route for the transportation of natural gas. Field analysis was not conducted for alternative routes and therefore is not included in this evaluation.

Several route segments were initially identified, evaluated, and combined where appropriate to form potential pipeline routes. All routes were compared relative to challenges associated with known environmental and cultural resources, engineering and constructability, as well as land and ROW. A route alternative is considered a linear segment of pipeline that does not follow the alignment of the proposed route. National Fuel analyzed two types of route alternatives: major routes and route variations.

Major Route Alternatives

A Major Route Alternative is an alignment that has the potential to meet the Project objective but would deviate significantly in both length and distance from the proposed route. Three Major Route Alternatives were evaluated for the Project: Alternative Route 1, Alternative Route 2, and Alternative Route 3. A tabular summary of this analysis is included within Table S3.F-1 below and the Major Route Alternatives considered depicted in Figure S3.F-1, Appendix C.

Alternative Route 1: Similar to the Preferred Route, Alternative Route 1 includes replacing 3.84 miles of the Z20 Replacement Pipeline and an additional 19.48 miles of new pipeline construction. In general, this alternative's route is similar to the Preferred Route for the first 9.43 miles but then

deviates and follows a more northerly route to its termination at the NFG Midstream Covington, LLC (Midstream) Lee Hill Interconnect.

Similar to the Preferred Route, National Fuel viewed Alternative Route 1 as favorable from an economic and safety standpoint as it would maximize paralleling existing National Fuel pipeline system and meet the objective of replacing the aged Z20 Pipeline; however, there are several disadvantages associated with Alternative Route 1. Specifically, Alternative Route 1 crosses approximately 79,779 feet of FERC delineated environmental justice areas whereas the Preferred Route crosses approximately 68,497 feet. National Fuel utilizes its best efforts to minimize environmental justice impacts when routing new pipelines and therefore prefers the Preferred Route over Alternative Route 1. In addition to incremental environmental justice impacts, Alternative Route 1 also impacts approximately 92 separate properties/parcels as compared to 81 that are impacted by the Preferred Route's YM59 portion. Alternative Route 1 would also impact more streams, riverine and forested wetlands, and cultivated areas than the Preferred Route (Table S3.F-1). For these key reasons, National Fuel elected to proceed with further planning and constructability analysis of the Preferred Route and did not conduct any additional field work for Alternative Route 1.

Alternative Route 2: Alternative Route 2 does not parallel the Z20 Pipeline ROW and does not include the replacement of the pipeline. The route starts at the beginning of the proposed Z20 Replacement Pipeline and travels in a southeasterly direction and then turns east near the Cowanesque River, crosses the Preferred Route at approximate milepost (MP) 9.64 and then begins to follow the same route as Alternative Route 1.

The alternative route encountered areas of severe side slope, areas traversing vertical slope(s), and areas with slip prone soil(s). These factors make construction challenging, create potential safety hazards for workers, and require tedious stability monitoring to ensure safe reliable operation of the pipeline. The alternative pipeline route also crosses approximately 77,775 feet of FERC delineated environmental justice areas, approximately 9,278 feet (1.76 miles) more than the Preferred Route and is not consistent with National Fuel's effort to minimize environmental justice impacts. In addition to incremental environmental justice impacts, Alternative Route 2 also impacts approximately 87 parcels as compared to 81 that are impacted by the Preferred Route and crosses approximately 2.19 miles (11,571 ft) more of upland forest than the Preferred Route (Table S3.F-1). For these key reasons, National Fuel has elected to proceed with further planning and constructability analysis of the Preferred Route and will not conduct any additional field work Alternative Route 2.

Alternative Route 3: Alternative Route 3 does not parallel the Z20 Pipeline ROW and does not include the replacement of the pipeline. The route starts at the beginning of the proposed Z20 Replacement Pipeline and travels in an easterly direction for approximately 1 mile before it turns and heads in a southeasterly direction towards the Preferred Route where it crosses at MP 3.09. It then follows in the same general direction as the Preferred Route until they separate at approximate MP 9.43, and Alternative Route 3 begins to follow a similar route as Alternative Route 1.

The alternative pipeline route also crosses approximately 79,223 feet of FERC delineated environmental justice areas, approximately 10,727 feet (2.03 miles) more than the Preferred Route and is not consistent with National Fuel's effort to minimize environmental justice impacts. In addition to incremental environmental justice impacts, Alternative Route 3 also impacts approximately 106 parcels as compared to 81 that are impacted by the Preferred Route's YM59

Table S3.F-1. Environmental Comparison of Major Route Alternatives to the Preferred Route

Data Source	Route Feature	Existing Z20 Pipeline Preferred Replacement	Preferred (YM59 ROW)	Alternative Route 1 (YM59 ROW)	Total Major Route Analysis			
					Total Preferred Route*	Total Alternative Route 1*	Alternative Route 2	Alternative Route 3
APDM	Total Length	3.84 mi	19.48 mi	19.50 mi	23.32 mi	23.34 mi	23.70 mi	23.10 mi
Core Logic	Total Parcels	18	63	72	81	92	87	106
Microsoft	Total Structures	4	30	61	34	65	50	47
Multinet	Total Roads	9	19	24	28	35	25	28
	Interstates	0	0	0	0	0	0	0
	US Routes	0	0	0	0	0	0	0
	State Routes	0	2	2	2	2	2	2
	County Roads	2	1	2	3	4	4	4
	Local Roads	7	16	20	23	29	19	22
	Railroads	0	2	1	2	1	1	2
PA Ch.93 Streams (2016b)	Total Streams	4	11	17	15	22	18	13
	Warm Water Fishes Streams	0	8	14	8	14	12	9
	Cold Water Fishes Streams	4	3	3	7	8	6	4
NWI Wetlands (2020)	Riverine	124.74 ft	483.56 ft	569.15 ft	608.30 ft	702.89 ft	558.82 ft	469.01 ft
National Land Cover Data Land Cover (2016)	Woody Wetlands	0.00 ft	0.00 ft	184.75 ft	0.00 ft	184.75 ft	0.00 ft	0.00 ft
	Emergent Herbaceous Wetlands	0.00 ft	0.00 ft	0.00 ft	0.00 ft	0.00 ft	0.00 ft	34.75 ft
	Deciduous Forest	6,750.19 ft	37,108.48 ft	32,591.61 ft	43,858.67ft	39,341.80 ft	52,233.51 ft	39,350.53 ft
	Mixed Forest	2,986.62 ft	7,794.94 ft	7,628.03 ft	10,781.56 ft	10,614.65 ft	13,194.74 ft	10,796.27 ft
	Hay or Pasture	8,999.43 ft	50,661.93 ft	49,537.03 ft	59,661.36 ft	58,536.46 ft	48,612.85 ft	57,188.90 ft
	Developed Open Space	1,886.49 ft	3,095.15 ft	5,586.58 ft	4,981.64 ft	7,473.07 ft	4,811.49 ft	3,243.74 ft
	Cultivated Crops	726.52 ft	1,398.85 ft	5,348.44 ft	2,125.37 ft	6,074.96 ft	4,103.05 ft	8,989.77 ft
	Herbaceous	0.00 ft	1,210.68 ft	1,091.93 ft	1,210.68 ft	1,091.93 ft	106.91 ft	1,326.35 ft
	Shrub or Scrub	0.00 ft	580.33 ft	135.73 ft	580.33 ft	135.73 ft	383.93 ft	61.25 ft
	Evergreen Forest	0.00 ft	1,008.39 ft	815.80 ft	1,008.39 ft	815.80 ft	1,223.06 ft	805.57 ft
	Developed Low Intensity	0.00 ft	0.00 ft	103.02 ft	0.00 ft	103.02 ft	372.32 ft	37.05 ft
	Barren Land	0.00 ft	0.00 ft	0.00 ft	0.00 ft	0.00 ft	2.71 ft	212.40 ft

Data Source	Route Feature	Existing Z20 Pipeline Preferred Replacement	Preferred (YM59 ROW)	Alternative Route 1 (YM59 ROW)	Total Major Route Analysis			
					Total Preferred Route*	Total Alternative Route 1*	Alternative Route 2	Alternative Route 3
U.S. Census Bureau 2022	Environmental Justice Area	0.00 ft	68,496.93 ft	79,778.76 ft	68,496.93 ft	79,778.76 ft	77,774.62 ft	79,223.60 ft
ESRI Terrain & Elevation	Side Slope	298.02 ft	0.00 ft	0.00 ft	298.02 ft	293.96 ft	289.53 ft	3,303.05 ft
	Soil Slippage	424.68 ft	2,931.66 ft	1,316.50 ft	3,356.35 ft	1,590.54 ft	4,207.74 ft	2,506.21 ft
	Steep Slopes	583.07 ft	3,579.22 ft	1,612.17 ft	4,162.29 ft	2,067.56 ft	5,181.92 ft	3,178.02 ft

* The Total Preferred Route is a combination of both the Existing Z20 Pipeline and the Preferred YM59 ROW. The Total Alternative Route 1 is a combination of both the Existing Z20 Pipeline and the Alternative Route 1 ROW.

Sources / Notes:

1. CoreLogic. ParcelPoint. [Dataset]. https://www.esri.com/partners/corelogic-spatial-so-a2T70000000TNNrEAO/parcelpoint-national-a2d39000001QnuwAAC
2. Microsoft. (2019-2020). USBuildingFootprints [Dataset]. https://github.com/Microsoft/USBuildingFootprints
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4. Pennsylvania Department of Environmental Protection. (2016b). Water Quality - Chapter 93 Designated Use Streams. [Dataset]. https://www.arcgis.com/home/item.html?id=766b81c5e91441878ec881e3954e254f
5. U.S. Fish & Wildlife Service. (2021). National Wetlands Inventory. [Dataset]. https://www.fws.gov/program/national-wetlands-inventory/download-state-wetlands-data
6. U.S. Geological Survey. (2016). NLCD 2016 Land Cover (CONUS). [Dataset]. https://www.mrlc.gov/data/nlcd-2016-land-cover-conus
7. U.S. Census Bureau (USCB) 2022a, USCB 2022b (Tables B17017 and B03002)
8. Environmental Systems Research Institute, Inc. (ESRI). (2013). Ground Surface Elevation - 30m. [Dataset]. https://www.arcgis.com/home/item.html?id=0383ba18906149e3bd2a0975a0afdb8e

mi = mile(s)
ft = feet

portion. For these key reasons, National Fuel has elected to proceed with further planning and constructability analysis of the Preferred Route and will not conduct any additional field work Alternative Route 3.

Minor Route Variations

Minor route variations along the YM59 Route have been identified in response to engineering and environmental constraints identified during field surveys, from direct landowner input and other issues of concern. National Fuel discussed landowner concerns before staking the route as well as by modifying the route after initial staking, to further accommodate the landowners' wishes. Where potential variations along the proposed route are identified, the variations were evaluated according to key environmental and engineering parameters to arrive at a preferred route through the area of concern. The purpose for developing route variations was to further refine the proposed route in areas of potential significant impacts, including environmentally sensitive areas and landowner concerns. Eight (8) route variations were evaluated to avoid specific features, address landowner concerns, or avoid impacts to sensitive resources.

A comparison of the minor route variations that were considered for the YM59 Route is presented below in Table S3.F-2 and the locations of the route variations are depicted in Figure S3.F-2, Appendix C.

Table S3.F-2. Summary of Route Variations Considered

Route Variation Number	Approximate MPs: Begin – End	Variation Description	Status
1	14.69 – 15.72	Avoids routing in proximity of residence, a non-participating owner and undesirable stream/road crossing at Baker Hill Road.	Incorporated
2	15.72 – 19.33	Avoids routing in proximity of residence/business and severe side slope construction along a town road. Route Variation 2 includes a lengthy stretch of severe side slope construction and crossing a large, forested tract. In addition, a landowner revoked survey permission and project participation along this variation.	Not incorporated; changed to Route Variation 3
3	15.72 – 19.48	This variation was developed in lieu of Route Variation 2. Route Variation 3 reduces the length of side slope construction, parallels an existing pipeline corridor minimizing environmental resource impacts, and when combined with Route Variation 1 reduces the length of the YM59 Pipeline by 0.33 mile.	Incorporated
4	16.86 – 17.12	This variation was developed to avoid a historic site and a large emergent wetland.	Incorporated
5	11.07 – 12.15	Avoids constructing directly down a steep slope in the headwaters area of a valley stream, and paralleling and constructing adjacent to a mapped stream resource.	Incorporated
6	5.51 – 5.86	This variation was developed to avoid Sylvester Quality Meats, which is classified as a High Consequence Area (HCA).	Incorporated
7	3.47 – 3.89	This variation was developed in response to a landowner request to move the line to avoid a stand of mature maple sugar trees.	Incorporated
8	0.00 – 0.37	This variation was necessary to connect the YM59 Pipeline to the preferred OPP station location (refer to Section 10.4.1).	Incorporated

Route Variation 1: Route Variation 1 deviates from the Preliminary YM59 Route (preliminary Preferred Route) at MP 14.70 and travels northeasterly crossing Dug Road, then parallels the south side of Baker Hill Road, deviates southeasterly to avoid a probable archeological significant area, then crosses Hunter Road and joins the beginning of Route Variations 2 and 3. Route Variation 1 avoids a stream and road crossing that presented some engineering concerns, proximity to a residence, and a non-participating landowner. National Fuel determined that this approximately 1-mile route variation minimizes impacts to forested areas, avoids a culvert and drain tile, and minimizes residential impacts. Therefore, Route Variation 1 meets the needs of the Project and has been incorporated into the Preferred Route.

Route Variation 2: Route Variation 2 was developed in order to avoid severe side slope construction and proximity to a residence and business along the south side of Dingman Hill Road. Specifically, this approximately 3.69-mile route variation starts at the end of Route Variation 1 and runs north for a short distance, then travels in an easterly direction until it crosses Lee Hill Road and turns south to connect with Midstream's Lee Hill Interconnect. Route Variation 2 includes a number of environmental resource concerns including a lengthy stretch of severe side slope construction and crossing a large, forested tract. In addition, a landowner revoked survey permission and project participation along this variation. Consequently, National Fuel determined that Route Variation 2 does not meet the needs of the Project and was eliminated from further consideration.

Route Variation 3: Similar to Route Variation 2, Route Variation 3 was developed in order to avoid severe side slope construction and proximity to a residence and business along the south side of Dingman Hill Road and evaluates a southern route versus the northern route of Variation 2. The approximately 3.70-mile Route Variation 3 starts at the end of Route Variation 1 and travels in a southeasterly direction and then turns, after crossing Ally Close Hill Road, and runs in a northeasterly direction to its terminus at Midstream's Lee Hill Interconnect. Route Variation 3 reduces the length of side slope construction, parallels an existing Eastern Gas Transmission and Storage dual pipeline corridor for approximately 1.6 miles, thus minimizing environmental resource impacts, and when combined with Route Variation 1 the overall length of the YM59 Pipeline is reduced by 0.33 mile (1,748 feet). Therefore, Route Variation 3 meets the needs of the Project and has been incorporated into the Preferred Route.

Route Variation 4: After incorporating Route Variation 3 and completing the cultural resource surveys, Route Variation 4 was developed to entirely avoid an identified historic site and its associated buffer. In addition, this 0.25-mile variation also avoids crossing a large emergent wetland. This variation deviates from Route Variation 3 just after crossing Wass Road and travels in a southeasterly direction for approximately 815 feet before it turns northeast and reconnects at MP 17.12. Route Variation 4 avoids both cultural and biological sensitive resources; therefore, this variation meets the needs of the Project and has been incorporated into the Preferred Route.

Route Variation 5: Route Variation 5 was developed to eliminate constructing down a steep slope and reduce environmental resource impacts in a stream valley. Route Variation 5 deviates from the Preliminary YM59 Route (preliminary Preferred Route) at MP 11.07 and continues in a southeasterly route along a ridge, turns northeasterly for short distance along the ridge shoulder and then rejoins the Preliminary YM59 Route. Route Variation 5 avoids constructing directly down a steep slope in the headwaters area of a valley stream, and paralleling and constructing adjacent to a mapped stream resource. Consequently, Route Variation 5 meets the needs of the Project and has been incorporated into the Preferred Route.

Route Variation 6: Route Variation 6 was developed to avoid Sylvester Quality Meats which is classified as an HCA. Route Variation 6 deviates from the Preliminary YM59 Route at MP 5.50 and continues approximately 0.35 mile to the northeast where it rejoins the Preliminary YM59 Route after crossing California Road. Both routes are primarily located in open agricultural land and cross California Brook. However, the route has been relocated approximately 300 feet north of the primary route and 575 feet north of the Sylvester Quality Meats structure to avoid impacts to an HCA and to meet the required Potential Impact Radius setback requirements**.** Accordingly, Route Variation 6 meets the needs of the Project and has been incorporated into the Preferred Route.

Route Variation 7: Route Variation 7 was developed in response to a landowner request to move the Preliminary YM59 Route to avoid a stand of mature maple sugar trees that is actively used for maple syrup production. This approximately 0.43-mile variation originates at MP 3.47, travels northeasterly for a short distance, then turns east and reconnects with the primary route at MP 3.90. This variation crosses the same open agricultural fields and landowner as the primary route alignment but responds to a landowner request and avoids specialty agricultural land use (syrup production) impacts. Accordingly, Route Variation 7 meets the needs of the Project and has been incorporated into the Preferred Route.

Route Variation 8: Route Variation 8 was developed to realign and connect the Preliminary YM59 Route with the preferred OPP station location (refer to Section 10.4.1). This approximately 0.37-mile variation originates at MP 0.0, then travels in a southeasterly direction where it connects with the primary route at MP 0.37. This variation crosses the same open agricultural fields and landowners as the primary route alignment. Accordingly, Route Variation 8 meets the needs of the Project and has been incorporated into the Preferred Route.

Cowanesque River Crossing (Tioga County)

National Fuel evaluated different crossing methods and alternative routes for the Cowanesque River in response to engineering and environmental constraints identified during field surveys, and other issues of concern. Each crossing method and alternative route was evaluated according to key environmental and engineering parameters to arrive at a preferred route across the sensitive resource. The purpose for evaluating different crossing methods and routes was to minimize potentially significant environmental impacts, and proactively address potential agency permitting requirements/conditions as well as landowner concerns.

Crossing Method: The Cowanesque River is a federally-designated navigable water of the United States pursuant to Section 10 of the Rivers and Harbors Act of 1899 and will require a Submerged Land License (refer to Attachment 22 of this JPA). It provides habitat for a variety of fish and wildlife and is a state-designated Stocked Trout Stream. The bank-to-bank width of the river ranges from approximately 50 to greater than 130 feet at the preferred crossing location.

National Fuel considered a number of different construction methods for the proposed river crossing. The dam and pump, dry stream crossing method is not considered feasible due to the width of the river and concerns related to fish passage. The flume, dry stream crossing method was also considered infeasible due to the variability of the flow rates during storm events (i.e., stream gage height measurements can vary from 0 to 4.71 feet) and the potential risk of flooding the trench if the flumes were breached.

Based on the engineering constraints and environmental concerns associated with the Cowanesque River, National Fuel is proposing to install the YM59 Pipeline beneath this river using the HDD method, thereby avoiding in-stream impacts and construction safety concerns. Accordingly, National Fuel has prepared an Inadvertent Return Plan for the HDD (refer to Attachment 21 of this JPA) and has evaluated different HDD crossing locations as presented below.

HDD Alternative Alignments: Geotechnical studies have been completed and engineering analysis of that data along with bend radius and acceptable pipeline stresses are being performed (refer to Attachment 21 of this JPA). Following these investigations, National Fuel has developed specific, detailed plans, including entry and exit pad locations and size, and site-specific plans (to scale) with areas of disturbance. In addition to the Preferred Route's proposed HDD location, National Fuel evaluated three (3) alternative alignments under the Cowanesque River, as shown in Figure S3.F-3 below.

- Alternative 1 entry would require the HDD drill rig set-up across a small tributary to the Cowanesque River adjacent to current workspace and the exit location would be near a small depression. These would likely increase the risk for inadvertent returns due to decreased soil pressure. The pullback area would also be a steeper pullback area and require false ROW, resulting in increased amount of agricultural land disturbance.

- Alternative 2, while similar to Alternative 1, would present nearly the same constructability and environmental concerns. The Alternative 2 entry is near and closer to the same tributary to the Cowanesque River as Alternative 1, and the close proximity of this tributary stream to the bore profile trajectory would likely increase the risk of an inadvertent return. The exit location, while not near the depression at the exit of Alternative 1, is too close to overhead powerlines to allow pickup of pullback string without a potential electrical hazard conflict with the powerlines.

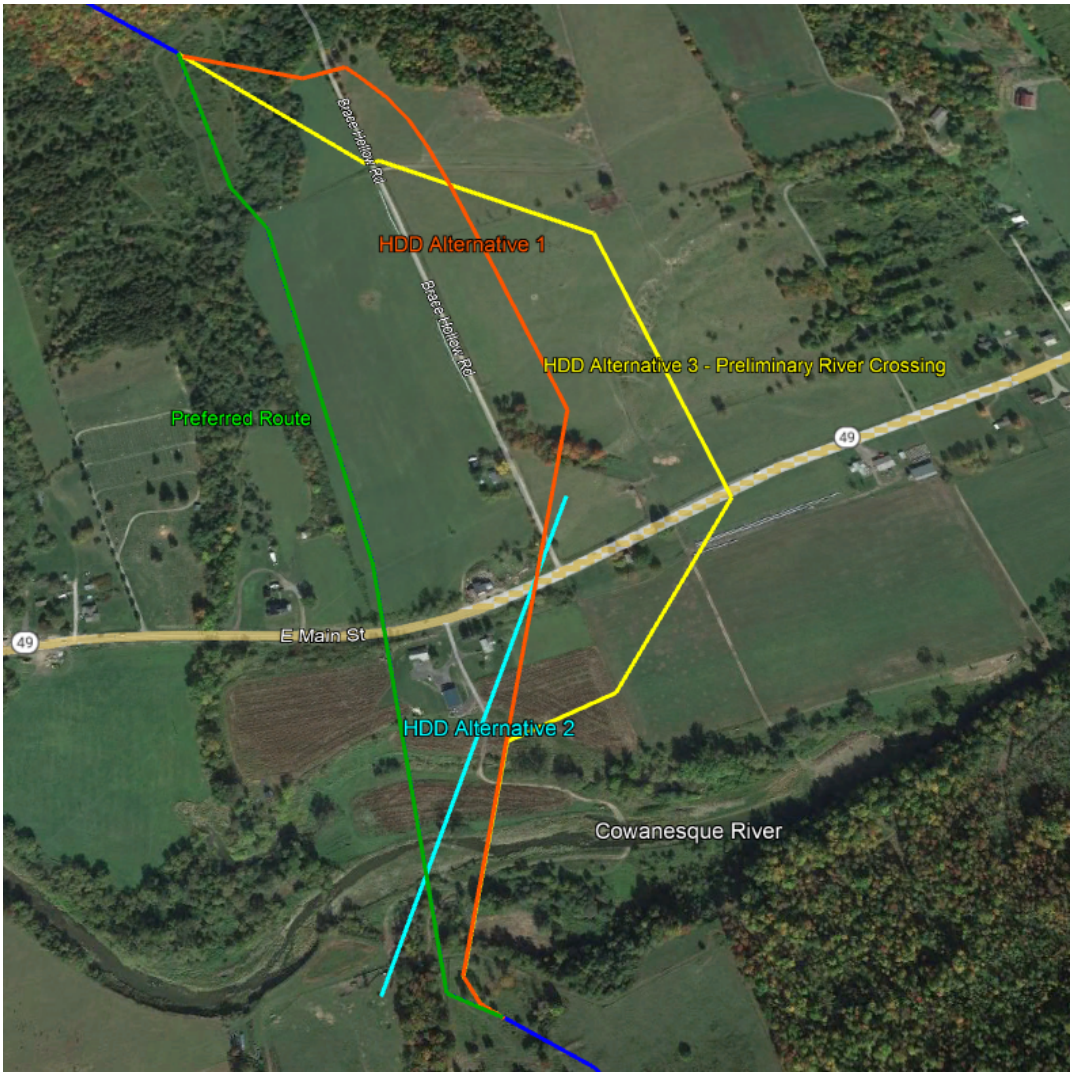
- Alternative 3 is very similar to Alternative 1 but presents a different approach on the north side of State Route 49. This HDD approach was deemed infeasible due to the lack of development length in the drill to get deep enough under the river and maneuver upwards based on drill geometry. The pullback for this alternative was impractical because State Route 49 would have to be closed or detoured during pullback operations, and this alternative crosses a portion of an active Bison Farm that the landowner asked National Fuel to avoid.

All three alternatives are also longer drills increasing any associated drilling risks. The alignments also result in more land disturbance (acreage) due to increased pipeline length and false ROW in the agricultural lands. In addition, the three alternatives cross an agricultural conservation easement enrolled in the Tioga County Agricultural Farmland Preservation Program (located on the east side of Brace Hollow Road).

The Preferred Route was developed to reduce the length of the Cowanesque River crossing and overall length of disturbance and avoids the agricultural conservation easement on the east side of Brace Hollow Road. In addition, the Preferred Route has been aligned to facilitate a more suitable perpendicular angle for a proposed HDD crossing of State Route 49 and the Cowanesque River, avoids a sensitive area of steep/high banks along the Cowanesque River, and the exit location is not affected by the powerlines. Considering the environmental and engineering advantages of the Preferred Route, National Fuel determined that the other alternatives did not

meet the needs of the Project and were eliminated from further analysis.

Figure S3.F-3. Alternative Alignments for HDD Under Cowanesque River



Aboveground Facilities Alternatives

The Project includes the installation of the McCutcheon Hill OPP Station at the eastern terminus of the Z20 Pipeline replacement and western terminus of the new YM59 Pipeline, measurement facilities at Midstream's Lee Hill Interconnect located at the eastern terminus of the new YM59 Pipeline, and minor modifications at National Fuel's existing Ellisburg Compressor Station (CS). Construction and operation/maintenance activities associated with these major aboveground facilities have been specifically designed to avoid impacts to aquatic resources; therefore, the alternatives considered are not presented in this JPA.

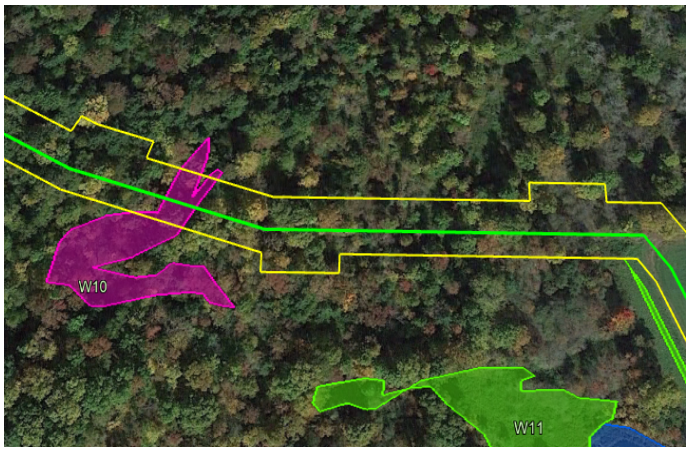
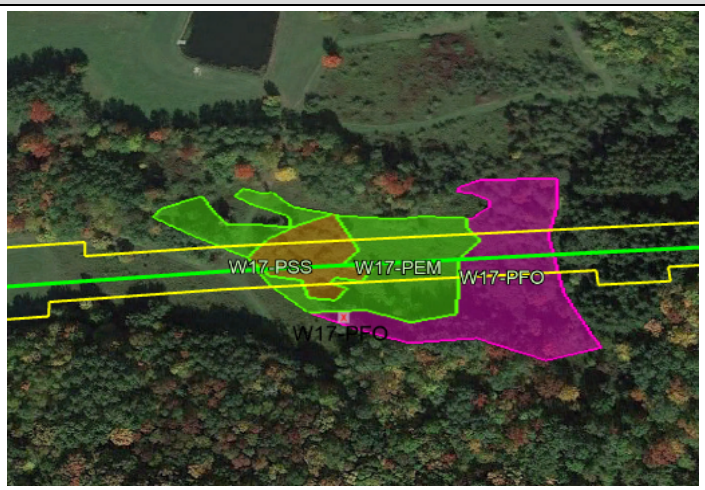
Resource Alternatives Analysis

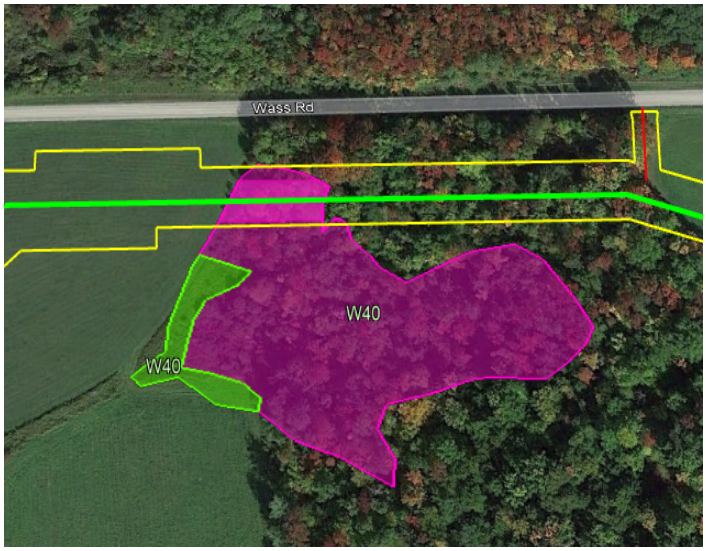
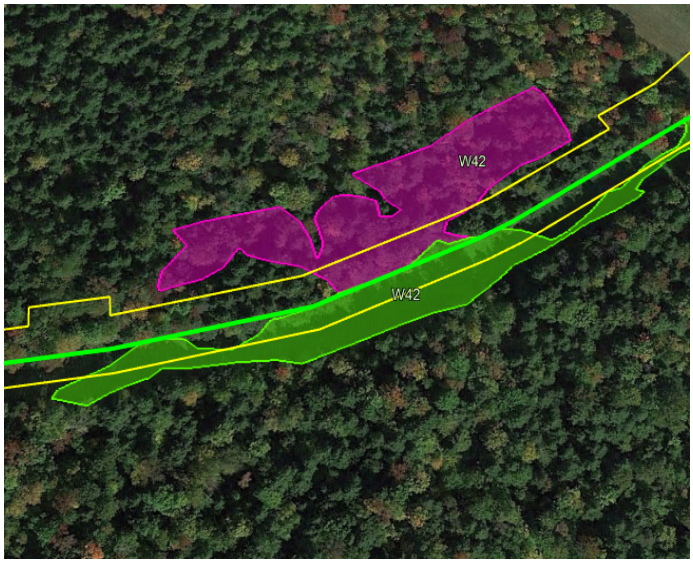
In addition to the various alternatives considered for the overall siting of the Project, National Fuel carefully assessed potential impacts to sensitive environmental resources including aquatic resources. As previously stated, the Project will not impact protected species (refer to Module S2.C) and has minimized impacts to national and state protected areas (refer to Module S3.B).

The Project does cross a number of streams and wetlands, but National Fuel has minimized impacts to these resources to the extent possible. However, considering the Z20 Pipeline route involves the replacement of the 12-inch-diameter 1936-vintage bare steel pipeline with new 20-inch-diameter coated steel pipeline in National Fuel's existing ROW, the crossing of regulated resources along this route is unavoidable and alternatives were not evaluated. The following provides a summary of the measures and analysis that National Fuel conducted along the YM59 Mainline Pipeline to avoid, minimize, and mitigate impacts to aquatic resources.

Construction of the 19.48-mile YM59 pipeline will disturb approximately 227.60 acres of land of which only 4.96 (2.18%) acres are wetland: 3.80 PEM (1.67%), 0.36 PSS (0.16%), and 0.80 PFO (0.35%). All wetlands will be restored to their pre-construction elevations and hydrology and will be allowed to revert to their pre-construction vegetative cover. However, to facilitate periodic corrosion/leak surveys National Fuel will maintain a 10-foot-wide corridor centered on the pipeline in an herbaceous state, and trees within 15 feet of the pipeline with roots that could compromise the integrity of pipeline coating may be selectively cut and removed. As such, there will be a permanent conversion of PFO and PSS wetlands to PEM over the pipeline centerline, as well as PFO to PSS within the 30-foot selectively managed corridor. Accordingly, National Fuel evaluated the proposed YM59 alignment through PFO wetlands to determine if permanent conversion impacts could be avoided or reduced any further (Table S3.F-3).

Table S3.F-3. Alternatives Analysis for Forested Wetland Crossings

Wetland ID	Proposed Route Alignment	Alternatives Analysis
Potter County		
W10 (MP 2.35)		The alignment through this area was based on landowner input and their desire to keep the route close to the property line to avoid bisecting their land (shown below).  Also, a move to the south would impact more of the PFO.
Tioga County		
W17 (MP 4.54)		The alignment of the pipeline in this area runs upslope, perpendicular to the contours, and avoids side slope construction to the extent possible. Only minor deviations from this alignment would be possible and they would not result in less PFO impact.
W55 (MP 9.56)		The alignment through this wetland has been designed to minimize the PFO crossing width and forested impacts, while maintaining the correct approach for the HDD crossing of the Cowanesque River.

Wetland ID	Proposed Route Alignment	Alternatives Analysis
W40 (MP 17.16)		Avoiding this wetland is not practical as it would involve moving the ROW closer to Wass Road. Also, in order to avoid a longer crossing of the wetland to the south, the entire route would need to be realigned through a large, forested tract rather than open agricultural areas.
W42 (MP 18.30)		The pipeline is collocated with an existing utility ROW through this area (on south side of LOD) and moving the alignment to the north would result in a longer PFO crossing or a new ROW through a large, forested tract.

S3.G Potential Secondary Impact Evaluation

Potential secondary impacts on adjacent land and water resources associated with but not directly resulting from the Project are discussed below.

Potential secondary impacts on water resources adjacent to the Project LOD could result from vegetation clearing and earth disturbance required for stream and wetland crossings and other general construction activities. These activities could cause a short-term release of turbid waters downstream or in adjacent areas of the wetland, and temporary displacement of wildlife (because of either turbidity or construction noise/human activity) using the adjacent areas for spawning, foraging, nesting, rearing, and resting. At most, potential secondary impacts from release of turbid waters and noise/human activity will be negligible in nature, given the short duration of in-stream construction and through implementation of temporary and permanent erosion and sediment controls (refer to Attachment 11 of this JPA). National Fuel agrees to follow in-stream construction

timing restrictions as indicated in the state permits, unless modified in writing by a state-approved waiver. National Fuel will work with the permitting agencies to obtain written permission, or waivers, to perform instream work within the restricted timing windows per the permits, where necessary.

Potential secondary impacts on water quantity or the hydrology of streams could result from temporary changes in natural/current drainage patterns and alteration in flow and water levels during in-stream construction activities. However, temporary dams and flow bypass methods will be used to maintain a continuous downstream flow during pipeline installation, and the duration of pipeline installation and restoration in streams will be limited to periods ranging from less than 1 day to 48 continuous hours or less. The Project does not involve any stream relocations, enclosures, or channel deepening/dredging activities. Given the Project involves no direct impacts to current drainage patterns, the Project will not result in secondary impacts to natural and current drainage patterns.

Potential secondary impacts to aquatic resource water quality beyond the Project's LOD could result from release of sediments/turbid waters from trenching, dewatering, clearing and grading of adjacent land and stream banks, and release of pollutants from construction equipment or activities adjacent to waters. However, in accordance with the Chapter 102 E&S requirements, trench dewatering will be monitored and directed into appropriate receiving structures located in stable, well-vegetated uplands to allow for filtration. Released water will naturally infiltrate to prevent secondary impacts to water quality of aquatic resources outside the ROW. Additionally, post-construction monitoring will ensure successful restoration and stabilization of the LOD occurs or necessary corrective actions are implemented to result in successful restoration, thereby avoiding potential secondary impacts associated with erosion and sedimentation. During Project operation, aerial and ground inspections by National Fuel personnel will identify soil erosion issues which will be rectified by repairs or installation of temporary erosion control devices until permanent erosion control measures become effective.

Potential secondary impacts to adjacent resources will be avoided and minimized to the extent possible such that there is no long-term adverse impact or loss of aquatic habitat, water quantity, or water quality in the surrounding areas.

S3.H Potential Cumulative Impacts

The Council on Environmental Quality (CEQ) regulations defines cumulative impacts as the "effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (CEQ 1997). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.1(i)(3)) (CFR).

Potential cumulative impacts associated with the Project, in both Potter and Tioga counties, are those that may potentially result from the combined effect on resources from construction and operation of the Project Facilities with other projects occurring in the vicinity of the Project. To evaluate the potential for cumulative impacts, National Fuel assessed recent, current, and reasonably foreseeable future projects or activities near the Project Facilities. Generally, if Project activities are deemed to have minor or insignificant impacts on a particular resource, the cumulative impacts resulting from the Project would also be considered minor or insignificant on that particular resource.

This Cumulative Impact Analysis addresses the cumulative impact of the Project and other past, present, and reasonably foreseeable future projects within the Cumulative Impact Assessment Area (CIAA) of the Project. Specifically, National Fuel evaluated the Project's impacts in combination with other projects' impacts within the vicinity of the Project on surface waters, wetlands, and groundwater resources. The CIAA for surface waters, wetlands, and groundwater resources are defined by the HUC 12 watershed. Watersheds are well-defined, natural boundaries for surface water flow and commonly contribute to the recharge of groundwater resources. HUC 12 is considered a local sub-watershed level that captures tributary systems. Surface water impacts may occur at waterbody crossings due to in-water construction and turbidity downstream from the crossing location. Watershed boundaries are defined boundaries of surface water flow within which cumulative impacts can be assessed. Groundwater impacts from equipment use may occur within the construction workspace during construction until soils stabilize with vegetation and may temporarily affect the water quality or yield of a private or public well/spring. Watershed boundaries provide a reasonable distance where the groundwater impacts can be assessed.

Past, present, and reasonably foreseeable future actions within each of the resource-specific geographic areas were identified through federal, state, and local agency and municipal websites, database searches, and direct communications; permit applications; and third-party communications. Data was collected for energy projects, transportation improvement projects, and industrial development activities.

Actions with the potential to contribute to cumulative impacts within the same geographic scope and timeframe as the Project are provided in Table S3.H-1. Specifically, Table S3.H-1 provides a brief description of these actions, identifies the locations and distances of the actions from the Project, and characterizes the timeframe for these actions (e.g., past, present, and future). It is anticipated that these projects either have involved or will involve grading and other ground-disturbing activities. Therefore, there is a potential for these projects to affect groundwater, surface water, and wetlands within the CIAA.

For the purpose of its cumulative impacts analysis, National Fuel has assumed that the past, ongoing, and reasonably foreseeable future projects listed on Table S3.H-1 are undergoing appropriate reviews by the applicable federal and state regulatory agencies, which are designed to avoid, minimize, and mitigate impacts to environmental resources. Furthermore, National Fuel anticipates that these projects will be required to be constructed in compliance with all applicable environmental regulations and requirements to avoid and minimize environmental impacts, and that any significant unavoidable impacts on sensitive resources would be mitigated in accordance with the applicable federal and state requirements.

The cumulative impacts on groundwater, surface water, and wetland resources are expected to be temporary and limited to the construction phase of the Project. Most impacts can be avoided or minimized using both standard and specialized construction techniques. Cumulative impacts would be limited to project areas that are near the proposed Project. National Fuel will follow their Erosion and Sedimentation Control & Agricultural Mitigation Plan, Project-specific Erosion and Sedimentation Control Plan (*Attachment 11 of this JPA*), and the required environmental permits, and will implement appropriate BMPs for the Project. The cumulative effect of the Project and other projects on groundwater, surface water, and wetland resources is expected to be insignificant.

Table S3.H-1. Past, Present, and Reasonably Foreseeable Future Projects Evaluated for Cumulative Impacts

Project	Description	Location (County)	Nearest Distance to Project MP or Facility & Direction	Current Status and Schedule	Footprint/Layout and Anticipated Impacts	Permits and Authorizations/ Description of Environmental Review, if required	Resources within Geographic Scope (Potentially Affected Resource Areas)
FERC Jurisdictional Projects							
Line Z20 Modernization Project CP23-17 (National Fuel Gas Supply Corporation)	Replacement of 11.6 miles of natural gas pipeline	Potter County	Connects with west end of Replacement Pipeline, same system.	Replacement complete	Slight overlap with Project footprint just west of Marsh Creek Road; within 0.5-mile, 1-mile, and 10-km buffer	FERC, PADEP Ch. 105 and 102 permits and associated clearances.	Surface waters; Wetlands; Groundwater resources
300 Line Project (Tennessee Gas Pipeline Company Docket No. CP09-444-000)	Expansion of 127.4 miles of new 30-inch diameter pipeline loops (including existing compressor stations in Potter and Tioga Counties)	Tioga and Potter Counties	Compressor Station 313 is located approximately 16 miles from new YM59 Mainline Pipeline MP 0.0 and pipeline is approximately 6.0 miles from MP 10.8 in Potter and Tioga Counties	Project complete, in Year 6 of post-construction monitoring	No overlap with Project footprint: but within 10-km buffer	FERC, PADEP, USACE, USFWS consultation, SHPO consultation, Susquehanna River Basin Commission, Delaware River Basin Commission, NJDEP	Surface waters; Wetlands; Groundwater resources
Empire North Project (Empire Pipeline, Inc Docket No. CP18-89-000)	Installation of new compression along the existing Empire pipeline system.	Tioga County	New Jackson Compressor Station located approximately 17 miles from MP 19.5	Completed in 2021	No overlap with Project footprint, and not within 10-km buffer	FERC, PHMSA, USFWS consultation, PA and NY SHPO consultation, PADEP, PA Department of Transportation (PennDOT)	Surface waters; Wetlands; Groundwater resources

Project	Description	Location (County)	Nearest Distance to Project MP or Facility & Direction	Current Status and Schedule	Footprint/Layout and Anticipated Impacts	Permits and Authorizations/ Description of Environmental Review, if required	Resources within Geographic Scope (Potentially Affected Resource Areas)
Various natural gas storage well fields[a]	Natural gas storage well fields	Potter County	Within 10-km buffer and one just north of MP 3.40 within the 1-mile buffer	Active	No overlap with project footprint; however, one storage field is within 1-mile buffer of Project footprint	FERC, PADEP, NYSDEC, PHMSA, USFWS consultation, PA and NY SHPO consultation, PADEP, PA Department of Transportation (PennDOT)	Surface waters; Wetlands; Groundwater resources
PennDOT Projects[b]							
NTIER Pedestrian Countdown Signals	Installation of pedestrian countdown signals for safety improvement	Tioga County	Approximately 1.2 miles from new YM59 Mainline Pipeline MP 9.9	Under construction	No overlap with Project footprint; but within 10-km buffer	PennDOT	Surface waters; Wetlands; Groundwater resources
SR4027 over Cummings Creek – Bridge	Bridge replacement at Cummings Creek Road over Cummings Creek, Farmington Township	Tioga County	Approximately 5.56 miles from new YM59 Mainline Pipeline MP 19.5	Anticipated	No overlap with Project footprint; but within 10-km buffer	PennDOT	Surface waters; Wetlands; Groundwater resources

Project	Description	Location (County)	Nearest Distance to Project MP or Facility & Direction	Current Status and Schedule	Footprint/Layout and Anticipated Impacts	Permits and Authorizations/ Description of Environmental Review, if required	Resources within Geographic Scope (Potentially Affected Resource Areas)
SR 49 Trib Cowanesque Bridge Replacement	Planned for the future – bridge replacement	Potter County	Approximately 0.3 mile from HV Contractor Yard	Part of the State Transportation Improvement Plan (STIP) which are the first four years of the PennDOT Twelve Year Program	No overlap with Project footprint; but within 0.5-mile, 1-mile, and 10-km buffer	PennDOT	Surface waters; Wetlands; Groundwater resources
SR 4007 Over California B – Bridge Rehabilitation	Planned for the future – bridge rehabilitation	Tioga County	Approximately 0.4 mile from the south end of YM59 TAR 6	Part of the STIP which are the first four years of the PennDOT Twelve Year Program	No overlap with Project footprint; but within 0.5-mile, 1-mile, and 10-km buffer	PennDOT	Surface waters; Wetlands; Groundwater resources
SR 4008 Over North Fork C – Bridge Rehabilitation	Planned for the future – bridge rehabilitation	Tioga County	Approximately 0.13 mile from new YM59 Mainline Pipeline MP 3.2 and approximately 0.02 mile from the northern entrance to YM59 TAR 2	Part of the STIP which are the first four years of the PennDOT Twelve Year Program	No overlap with Project footprint; but within 0.5-mile, 1-mile, and 10-km buffer	PennDOT	Surface waters; Wetlands; Groundwater resources

Project	Description	Location (County)	Nearest Distance to Project MP or Facility & Direction	Current Status and Schedule	Footprint/Layout and Anticipated Impacts	Permits and Authorizations/ Description of Environmental Review, if required	Resources within Geographic Scope (Potentially Affected Resource Areas)
SR 4009 (Austinburg Road) over Troups Creek	Bridge improvement	Tioga County	Approximately 4 miles from MP 8.1	Under Construction, anticipated to be complete by 3/19/2024	No overlap with Project footprint; but within 10-km buffer	PennDOT, USACE Regional general permit issued 1/04/2024	Surface waters; Wetlands; Groundwater resources
Oil & Gas Production Wells and Midstream Gathering Projects							
Multiple conventional and unconventional oil and gas production wells	Oil and gas wells	Tioga and Potter Counties	Multiple within 1-mile buffer of Project footprint	Active	See Cumulative Impact Map, sheet 4 of 4	PADEP	Surface waters; Wetlands; Groundwater resources
HFS Waterline Project	Highland Field Services, LLC	Tioga County	Approximately 0.10 mile from Project Footprint	Completed in 2023	No overlap with Project footprint; but within 0.5-mile, 1-mile, and 10-km buffer	PADEP	Surface waters; Wetlands; Groundwater resources
Fuller to Cruttenden Pipeline Project	NFG Midstream Covington, LLC	Tioga County	Approximately 2.5 miles from Project footprint	Completed in 2023	No overlap with Project footprint; but within 10-km buffer	PADEP, USACE general permit issued	Surface waters; Wetlands; Groundwater resources
Keeneyville Dehydration Station	NFG Midstream Covington, LLC	Tioga County	Approximately 3 miles from Project Footprint	Active	No overlap with Project footprint; but within 10-km buffer	PADEP, USACE general permit issued	Surface waters; Wetlands; Groundwater resources
Bauer and Taft Pipeline Project	NFG Midstream Covington, LLC	Tioga County	Approximately 3 miles from Project Footprint	Completed in 2024	No overlap with Project footprint; but within 10-km buffer	PADEP, USACE general permit issued	Surface waters; Wetlands; Groundwater resources

Project	Description	Location (County)	Nearest Distance to Project MP or Facility & Direction	Current Status and Schedule	Footprint/Layout and Anticipated Impacts	Permits and Authorizations/ Description of Environmental Review, if required	Resources within Geographic Scope (Potentially Affected Resource Areas)

Notes:

[a] Storage fields may include storage and/or production wells that are under FERC jurisdiction.

[b] Generally, for the listed PennDOT projects, only the closest (within approximately 5 miles) and/or most relevant (larger scale or more potential for cumulative effects) are included.

Sources (Accessed May 2024):

- FERC eLibrary accessed at https://elibrary.ferc.gov/eLibrary/search.
- U.S. Energy Information Administration (EIA) Pipeline projects data accessed at https://www.eia.gov/naturalgas/data.php#pipelines .
- USACE Jurisdictional Determinations and Permit Decisions at https://permits.ops.usace.army.mil/orm-public#
- USEPA Environmental Impact Statement (EIS) database at https://cdxapps.epa.gov/cdx-enepa-II/public/action/eis/search
- PADEP Pennsylvania Pipeline Portal at https://www.dep.pa.gov/Business/ProgramIntegration/Pennsylvania-Pipeline-Portal/pages/default.aspx
- PA Spatial Data Access at: http://www.pasda.psu.edu/uci/SearchResults.aspx?originator=Pennsylvania+Department+of+Environmental+Protection
- PADEP & PUC: Publicly available information (including pipeline and Oil and Gas Well records and permits) accessed at https://www.dep.pa.gov/DataandTools/Pages/default.aspx; https://www.dep.pa.gov/DataandTools/Pages/GIS.aspx; https://www.dep.pa.gov/DataandTools/Reports/Pages/default.aspx; https://gis.dep.pa.gov/PaOilAndGasMapping/OilGasWellsStrayGasMap.html; https://www.dep.pa.gov/About/Regional/RPCO/Pages/default.aspx; https://www.puc.pa.gov/filing-resources/
- PennDOT Road and Bridge Project Construction Mapper accessed at https://gis.penndot.pa.gov/paprojects/ConstructionMap.aspx
- PennDOT Transportation Improvement Program Mapper accessed at https://gis.penndot.pa.gov/paprojects/TipVisMap.aspx
- Oil and Gas and Other Industry websites: https://informationalpostings.natfuel.com/supply/market/MktgNews/Presentations/documents/NFGSC_SYSTEM_MAP.pdf; https://www.nationalfuel.com/pipeline-storage/national-fuel-gas-supply-corp/maps-and-tables/; https://www.nationalfuel.com/pipeline-storage/empire-pipeline/about-empire-pipeline/

Module S4: Mitigation Plan

The PA Code Chapter 105.1 defines mitigation as:

> (i) *An action undertaken to accomplish one or more of the following:*
> *(A) Avoid and minimize impacts by limiting the degree or magnitude of the action and its implementation.*
> *(B) Rectify the impact by repairing, rehabilitating, or restoring the impacted environment.*
> *(C) Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action.*
> *(ii) If the impact cannot be eliminated by following clauses (A)–(C), compensate for the impact by replacing the environment impacted by the project or by providing substitute resources or environments.*

As presented in the following sections of this Module and Appendix D (Preliminary Permittee Responsible Mitigation Plan) of this EA, National Fuel has incorporated all levels of mitigation into construction and operation/maintenance of the proposed Project.

S4.A Avoidance and Minimization Measures

As presented in S3.F (Alternatives Analysis), the Pipeline and associated workspace areas were sited to avoid or minimize impacts to wetland and waterbody areas located in the vicinity of the Project Area. In addition, the resource crossing methods described in S3.D (Direct and Indirect Impacts), have been developed, fine-tuned, and implemented by the industry for decades and have demonstrated successful minimization of long-term impacts to regulated resources throughout the Commonwealth of PA.

In addition, National Fuel will conduct all construction activities through regulated resources in accordance with FERC's Wetland and Waterbody Construction and Mitigation Procedures (Procedures) and applicable permit conditions, unless more stringent regulatory requirements apply. Specific BMPs for water body crossings, wetland crossings and site-specific waterbody crossings will be implemented as presented in the Erosion and Sedimentation Control Plan (Attachment 11 of this JPA). Erosion control techniques, including deployment of compost filter socks, slope breakers, trench plugs, restoration, and revegetation will be used in upland areas to prevent sediment runoff into adjacent resources. National Fuel will also implement spill prevention and response procedures to avoid potential impacts from refueling of equipment and fuel storage within the vicinity of resources.

As demonstrated herein, National Fuel has avoided and minimized impacts to waters and wetlands from the Project to the extent possible. It is National Fuel's opinion that there is no practicable alternative to the resource crossings that would have less effect on each waterbody or wetland, and not have other significant adverse effects on the environment or landowner, taking into consideration construction costs, existing technology, safety, and logistics. In accordance with PADEP requirements, National Fuel proposes to mitigate as appropriate for the unavoidable impacts through implementation of restoration and mitigation measures as discussed in the following sections and Appendix D of this EA.

S4.B Repair, Rehab, and Restoration Actions/Proposed Preservation and Maintenance Operations

Although many avoidance measures were taken during Project routing and planning, the Project will unavoidably require installation of a buried pipeline beneath a number of streams and wetlands. Although the selected construction techniques, associated erosion and sedimentation control measures, and other BMPS that will be implemented were specifically designed to reduce and minimize impacts on aquatic resources to the maximum extent practicable, most wetland and stream crossings will require the temporary disturbance of wetland soils, and stream banks and beds. However, following installation of the pipeline resources will be restored to preconstruction contours (including restoring wetland elevations and stream banks and bed) and stabilized, seeded for revegetation, protected with erosion and sedimentation controls, and monitored (for both wetland restoration and invasive plant species) until revegetation and full, successful restoration is achieved.

Standard post-construction ROW maintenance procedures require that woody vegetation be limited within the 50-foot-wide permanent pipeline easement. The U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA) requires ROW patrols, aerial surveillance, and other means of monitoring to ensure damage prevention and leak detection for pipeline integrity and public safety. To facilitate post-construction ROW patrols and surveillance for pipeline safety, National Fuel will conduct routine vegetation maintenance along the permanent ROW easement in accordance with the FERC's Procedures. The Procedures' environmental requirements for post-construction ROW maintenance in wetlands and streams are designed to limit the impacts of vegetation maintenance on streams and wetlands. Specifically, National Fuel will not mow vegetation across the entire 50-foot-wide permanent easement width in wetlands. Instead, National Fuel will maintain a mowed corridor not exceeding 10 feet in width centered over the pipeline, which may be maintained annually in an herbaceous state to facilitate periodic corrosion and leak surveys. Additionally, trees/shrubs within 15 feet of the pipeline with roots that could compromise the integrity of the pipeline coating may be selectively cut and removed from the ROW. National Fuel installs markers in wetland and riparian areas to restrict and limit mowing in these areas.

Streams

All streams impacted by the proposed Project will be restored to their original conditions: there will be no change to their substrate, flow regime, or banks. In addition, National Fuel proposes to voluntarily replant a total of approximately 4.928 acres of previously forested/scrub-shrub areas within the 50-foot riparian buffer landward from each stream bank, with the exception of the 30-foot-wide pipeline corridor that will be maintained in herbaceous cover: Figure S4.B in Appendix C of this EA shows the areas of proposed plantings. A detailed planting plan including, but not limited to proposed tree/shrub species, container sizes, and spacing will be developed and provided to DEP for review and approval prior to implementation. Implementation of this on-site, in-kind restoration for all temporary impacts to waterbodies results in no long-term impacts to waterbodies impacted by the proposed Project; therefore, compensatory mitigation for waterbodies is not required.

Wetlands

The post-construction routine vegetation maintenance procedures in the 10-foot-wide mowed corridor centered over the pipeline (i.e., 5-foot on either side of the pipeline) will result in the

permanent conversion of PFO and PSS vegetation to PEM herbaceous wetland vegetation, and the selective cutting of trees within the 30-foot corridor may result in the conversion of PFO to PSS wetlands . However, the remaining area outside of the maintained corridor will be allowed to naturally revert to its pre-existing cover, including shrubs and trees. In addition, National Fuel proposes to plant trees/shrubs in wetland areas located within and contiguous to the riparian buffers: specifically, 0.538 acre of PEM, 0.792 acre of PSS and 0.466 acre of PFO will be planted within the non-maintained pipeline corridor to supplement the revegetation of these areas and to promote re-establishment of PSS and PFO wetlands on the ROW (refer to Figure S4.B in Appendix C of this EA).

National Fuel thoroughly assessed the viability and benefits of conducting on-site mitigation and determined it would create multiple, small, isolated mitigation projects that have been shown to be less ecologically beneficial, have a lower likelihood for long-term success, and are more susceptible to invasive species due to increased edge effect. On-site mitigation is also subject to the repercussions of landowner actions, especially in areas outside of National Fuel's 50-foot easement where there is no longer a contractual agreement with the landowner following construction. In addition, these areas create an increased number of maintenance/monitoring plans to be reviewed, increasing the long-term regulatory burden on the agencies by requiring reviews and field visits to multiple small restoration sites. As such, it is National Fuel's opinion that the on-site mitigation opportunities for this Project are less conducive to complying with the "no net loss" and/or "watershed approach" policy(s) commensurate with the Final Rule.

Therefore, in recognition of this permanent conversion of PFO wetlands within the 30-foot wide maintained corridor and PSS wetlands within the 10-foot-wide maintained corridor and the potential long-term impacts associated with the re-establishment of PFO and PSS wetlands in the adjacent non-maintained areas, National Fuel has proactively and conservatively identified all PFO and PSS impacts as a permanent conversion to PEM (Table S4.B-1).

Table S4.B-1 Summary of Project Wetland Impacts and Mitigation Needs

Wetland Type	Total Acreage Disturbed	Acreage of In-Kind Restoration On-Site[1,2]	Acreage of Permanent Impact		Total Post-Construction Acreage On-Site
			Conversion	Fill	
Potter County					
PEM	1.206	1.206	0.000	0.000	1.236
PSS	1.548	1.548	1.548	0.000	1.548
PFO	0.414	0.384	0.414	0.000	0.384
Potter Totals	**3.168**	**3.138**	**1.962**	**0.000**	**3.168**
Tioga County					
PEM	3.796	3.794	0.000	0.002	4.107
PSS	0.359	0.315	0.359	0.000	0.315
PFO	0.731	0.462	0.731	0.000	0.462
Tioga Totals	**4.886**	**4.571**	**1.090**	**0.002**	**4.884**
Project Totals	**8.054**	**7.709**	**3.052**	**0.002**	**8.052**

[1] All wetlands will be restored on site to their pre-existing cover type via natural revegetation and riparian plantings, where applicable, with the exception of the maintained ROW. However, National Fuel has conservatively identified all PSS and PFO impacts as a permanent conversion and has included them in their compensatory mitigation plan (refer to Module S4.C).
[2] All wetland impacts associated with replacement of the existing Z20 pipeline are considered temporary.

Specifically, National Fuel has conservatively identified the following wetland impacts in Tioga County:

- 4.886 acres of wetland will be impacted,
- 0.359 acre of PSS wetland may be converted to PEM, and
- 0.731 acre of PFO wetland may be converted to PEM.

National Fuel has also conservatively identified the following wetland impacts in Potter County:

- 3.168 acres of wetland will be impacted,
- 1.548 acres of PSS wetland may be converted to PEM, and
- 0.414 acre of PFO wetland may be converted to PEM.

Despite the on-site, in-kind natural revegetation of the PFO/PSS wetlands and supplemental planting of 1.796 acres of wetlands in the non-maintained ROW, National Fuel is proactively proposing compensatory mitigation for the total 1.907 acres of PSS and 1.145 acres of PFO wetlands impacted by the Project. This approach will support many of the critical components of the Compensatory Mitigation for Losses of Aquatic Resources Final Rule issued on April 10, 2008 as detailed in 33 CFR §332.4(c) of the Federal Register (Volume 73, Number 70) including the likelihood for success and sustainability, potential to maximize ecological uplift, the significance of the restored resources within the watershed, and the proximity of the impact and mitigation sites from a watershed perspective.

National Fuel will conduct annual post-construction monitoring (for both wetland and stream restoration and invasive plant species) for a minimum of three years to document the successful restoration of PEM wetlands and streams. If post-construction monitoring finds that any wetland or stream requires corrective actions to restore wetland or stream status, stability, or function, then National Fuel would implement such actions where needed.

S4.C Compensatory Mitigation

As previously stated, no permanent fill or stream relocation would occur as a result of Project installation, operation, or maintenance. All streams will be restored to original conditions and there will be no loss of resource function; therefore, compensatory mitigation will not be required for waterbody crossings, in accordance with Pennsylvania's current regulations.

During construction, a total of approximately 8.054 acres of wetlands will be temporarily disturbed by vegetation clearing and soil disturbance in the Project construction workspaces, including 5.002 acres of PEM, 1.907 acres of PSS, and 1.145 acres of PFO. National Fuel has proactively and conservatively identified all PFO and PSS impacts as a permanent conversion to PEM and is proposing compensatory mitigation for the total 1.907 acres of PSS and 1.145 acres of PFO wetland impacts.

As shown in Table S4.C-1, none of the impacted wetlands are classified as Exceptional Value and based on industry standards and their proactive on-site restoration/planting of PFO/PSS wetlands, National Fuel is proposing a ratio of 1:1 for the conversion of impacted PSS wetlands and 2:1 for the PFO wetland impacts. In addition, National Fuel is proposing a 2:1 mitigation ratio for the permanent fill of 0.002 acre of PEM wetland. As such, a total of 4.197 acres of off-site compensatory wetland mitigation is proposed to offset the total 3.052 acres of PSS and PFO wetland conversion. Impacts associated with the 0.002 acre of filled PEM will be mitigated with

the purchase of approved mitigation credits (0.004 acre) from a mitigation bank within the Tioga-Cowanesque Rivers Subbasin (refer to Appendix D).

Table S4.C-1 Proposed Compensatory Wetland Mitigation

Wetland Type	Ch. 93 Designation	Total Impact (Acres)	Ratio Applied	Mitigation Acres Needed
PSS	EV	0.000	1.5:1	0.000
	Non-EV	1.907	1:1	1.907
PFO	EV	0.000	2.25:1	0.000
	Non-EV	1.145	2:1	2.290
PEM	EV	0.000	2.25:1	0.000
	Non-EV	0.002	2:1 (fill)	0.004
Totals		**3.054**		**4.201**

National Fuel has contracted Resource Environmental Solutions (RES), to develop a Permittee-Responsible Mitigation (PRM) Plan to compensate for unavoidable impacts to waters of the United States (U.S.) associated with the Project. RES has prepared their Preliminary PRM Plan for the Project (Appendix D) in accordance with the Compensatory Mitigation Final Rule.

The Final PRM Plan will detail the alternatives considered for completing compensatory mitigation, how the affected resources functions and values will be offset from the proposed compensation approach and provide detailed discussions regarding maintenance and monitoring of the PRM Site to ensure that performance standards are achieved. The Final PRM Plan will also contain detailed mapping, a final planting plan, and a formal wetland delineation report of the PRM site. An example Table of Contents for the Final PRM Plan is included in Appendix D.

Regulated aquatic resource impacts associated with the proposed Project will occur within the Upper Susquehanna Watershed (8-Digit Hydrologic Unit Code (HUC) #02050104) of the Tioga-Cowanesque Rivers Subbasin (Watershed 4). Compensatory mitigation required for the Project within this watershed is due to permanent conversion of PSS and PFO wetlands to PEM wetlands within the Project footprint. In addition, 0.002 acre of PEM wetland loss will occur due to fill. Consistent with the Compensatory Mitigation Final Rule, the Permittee first sought to purchase approved mitigation credits from an existing mitigation bank, however bank credits are not anticipated to be available in the amounts or time frame needed for the Project. As the required approved mitigation credits will be available within the Tioga-Cowanesque Subbasin, and because no In Lieu Fee programs are active within the Watershed, PRM is proposed to offset the wetland conversion impacts associated with the Project. The PRM site will be located at an appropriate off-site restoration location within Tioga County and within the Tioga-Cowanesque Rivers Subbasin (Appendix D). RES currently has land control of the proposed PRM site, which is characterized by anthropomorphically-degraded (grazed/agriculture) emergent wetlands.

At the proposed PRM site, the wetland enhancement process will involve diligent invasive species management and native seeding and planting efforts. After the initial weed control efforts, the site will be prepared for planting. A variety of large and small native trees and shrubs will be installed in the wetland enhancement areas and these areas will be seeded with a native seed mix. Trees and shrubs will be planted at an approximate density of 500 stems/acre and per their hydrologic needs and adaptability, with trees and shrubs that are able to tolerate wetter conditions installed

in and around the lower gradient areas and more facultative species installed within the slightly higher wetland areas.

The PRM site will be protected by a permanent site protection instrument in advance of the proposed activities outlined in the Final PRM Plan, ensuring the long-term protection of the PRM Site. The site protection instrument will be recorded within 60 days in the county courthouse after USACE/PADEP approval, with subsequent approval from NFG to move forward with mitigation. An example of the copy of the site protection instrument to be filed upon permit approval is included in Appendix D. The site protection instrument restricts activities that are incompatible with the objectives of the PRM Plan.

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