Attachment H-3 Impacts of the Proposed Regulated Activities on the Identified Resources

Revised June 2025

Identification and Description of Potential Project Impacts

Impact Summary

Table 1 identifies the proposed temporary and permanent direct and indirect impacts for each resource type affected by the Project.

Table 1. Summary of Project Impacts

Resource Category	Temporary Impacts		Permanent Impacts	
	Direct[a] (ft² / Acres)	Indirect[b] (ft² / Acres)	Direct[c] (ft² / Acres)	Indirect[d] (ft² / Acres)
Overall Project				
Streams	1,220 / 0.028	50,399 / 1.157	0 / 0.0	3,398 / 0.078
Wetlands	7,972 / 0.183	**307,663 / 7.063**	85 / 0.002	**35,114 / 0.806**
Floodway	95,048 / 2.182	662,504 / 15.209	958 / 0.022	46,087 / 1.058
Project Totals	**104,240 / 2.393**	**1,020,556 / 23.429**	**1,043 / 0.024**	**84,599 / 1.942**

a Temporary direct impact consist 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.
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~~floodway 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.

All aquatic resources located within the Project limits of disturbance (LOD) are identified in the resource tables included in Attachment G-3, which identify and quantify the aquatic resource impacts for the Project. 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.

The following sections describe the nature of these Project impacts, and the impact minimization and mitigation measures, for construction and operation/maintenance activities associated with the impacted resources.

Streams

National Fuel plans to install the pipeline beneath all waterbodies using a trench excavated dry crossing method (i.e., dam and flume or dam and pump), and will install the pipeline under the Cowanesque river using 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~~floodway will be weighted to prevent flotation. The pipe will be welded together in the staging areas and then carried or floated along the ROW into place. After the pipe is lowered into the trench, previously excavated material will be returned to the trench line for backfill. Stream flow will always be maintained at waterbody crossings, and no alteration of the stream's capacity is anticipated because of pipeline construction. As a rule, the completion of all construction activities should not exceed 24 hours at stream crossings less than 10 feet wide and 48 hours at stream crossings between 10 and 100 feet wide.

After the completion of construction, streambeds will be restored to their former elevations and grades. 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 conditions: there will be no change to their substrate, flow regime, or banks. Forested/scrub-shrub upland and wetland riparian areas will be replanted in accordance with National Fuel's Mitigation Plan, with the exception of a 30-foot-wide corridor within the 50-foot-wide permanent ROW, which will be maintained in herbaceous cover.

Aboveground facilities have been specifically sited to avoid floodways of the waterbodies impacted by the proposed Project to the extent possible. However, the valve setting at the west end of the Z20 Replacement Pipeline needs to be modified and will require installing a permanent gravel pad that will permanently impact approximately 0.022 acre (950 ft^2) of S73z's floodway. Construction of the gravel pad will include installing geocell as a post-construction BMP to mitigate any potential increase in runoff flow rate and volume. Consequently, this change in the floodway's cover (open/grass to gravel) should not impact the hydraulics or hydrology of the stream or result in any associated storm water management impacts. All other impacted floodways will be restored to pre-construction conditions.

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, there are many situations where, 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 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 possible.
- Pulling of tree stumps and grading activities 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. Grading and pulling of tree stumps will be limited to only the trench line area, 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. However, it may be necessary to widen the ROW width to facilitate construction in certain areas (i.e., certain stream and road crossings, topsoil segregation in agricultural areas, side slopes, and HDD work areas), depending on site-specific needs. 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 to the extent practicable Project-wide ~~in Potter County; therefore, no wetlands will be permanently filled~~. However, in Tioga County, wetland W61 is crossed by PAR-9 and approximately 0.0017 acre (77 square feet) of permanent fill will be required.

Based on PADEP's definition, the entire 50-foot-wide permanent easement associated with the pipelines is considered a permanent impact and the remaining typically 25-foot-wide areas of workspace within the Project LOD in wetlands are considered temporary impacts. All wetlands will be restored to their pre-existing contours/elevations and wetland conditions following construction but there will be a permanent conversion of PSS and PFO cover type associated with 30-foot-wide pipeline corridor that will be maintained in herbaceous (PEM) cover. As such, compensatory mitigation for permanent conversion impacts through forested and scrub-shrub wetlands has been developed for the Project.