EQUITRANS

Equitrans Expansion Project

Docket No. PF15-22

Draft Resource Report 2
Water Use and Quality

Draft

July 2015

This page intentionally left blank

Equitrans Expansion Project
Draft Resource Report 2 – Water Use and Quality

Resource Report 2 Filing Requirements	
Information	**Location in Resource Report**
Minimum Filing Requirements	
1. Identify all perennial surface waterbodies crossed by the Project and their water quality classification. (§ 380.12(d)(1)) • Identify by milepost • Indicate if potable water intakes are within 3 miles downstream of the crossing.	Section 2.2.4; Appendix 2-A
2. Identify all waterbody crossings that may have contaminated waters or sediments. (§ 380.12(d)(1)) • Identify by milepost • Include offshore sediments.	Sections 2.1.3.5, 2.1.4.4, and 2.2.3
3. Identify watershed areas, designated surface water protection areas, and sensitive waterbodies crossed by the Project. (§ 380.12(d)(1)) • Identify by milepost	Sections 2.2.1; Table 2.2-1
4. Provide a table (based on NWI maps if delineations have not been done) identifying all wetlands, by milepost and length, crossed by the Project, and the total acreage and acreage of each wetland type that would be affected by construction. (§ 380.12(d)(l&4))	Section 2.3; Table 2.3-1; Appendices 2-A and 2-C
5. Discuss construction and restoration methods proposed for crossing wetlands, and compare them to staff's Wetland and Waterbody Construction and Mitigation Procedures. (§ 380.12(d)(2))	Section 2.3
6. Describe the proposed waterbody construction, impact mitigation, and restoration methods to be used to cross surface waters and compare to the staff's Wetland and Waterbody Construction and Mitigation Procedures. (§ 380.12(d)(2)) • Although the Procedures do not apply offshore, the first part of this requirement does apply. Be sure to include effects of sedimentation, etc. This information is needed on a mile-by-mile basis and will require completion of geophysical and other surveys before filing. (See also Resource Report 3.)	Sections 2.2.6 and 2.2.8
7. Provide original National Wetlands Inventory (NWI) maps or the appropriate state wetland maps, if NWI maps are not available, that show all proposed facilities and include milepost locations for proposed pipeline routes. (§ 380.12(d)(4))	Appendix 2-C
8. Identify all U.S. Environmental Protection Agency (EPA)- or state-designated aquifers crossed. (§ 380.12(d)(9)) • Identify the location of known public and private groundwater supply wells or springs within 150 feet of construction.	Sections 2.1.1, 2.1.2, and 2.1.3; Tables 2.1-2 and 2.1-3
9. Identify proposed mitigation for impacts on groundwater resources.	Section 2.1.4
10. Discuss the potential for blasting to affect water wells, springs, and wetlands, and associated mitigation.	Sections 2.1.4.1, 2.1.4.3, 2.2.9.1, and 2.2.9.5
11. Identify all sources of hydrostatic test water, the quantity of water required, methods for withdrawal, and treatment of discharge, and any waste products generated.	Sections 2.2.7 and 2.2.9.4

Resource Report 2 Filing Requirements	
Information	**Location in Resource Report**
12. If underground storage of natural gas is proposed, identify how water produced from the storage field will be disposed.	Not Applicable
13. If salt caverns are proposed for storage of natural gas, identify the source locations, the quantity required, the method and rate of water withdrawal, and disposal methods.	Not Applicable
14. For each waterbody greater than 100 feet wide, provide site-specific construction mitigation and restoration plans.	Sections 2.2.8-1; Table 2.2-4; Appendices 2-A and 2-B
15. Indicate mitigation measures to be undertaken to ensure that public or private water supplies are returned to their former capacity in the event of damage resulting from construction.	Section 2.1.4
16. Describe typical staging area requirements at waterbody and wetland crossings.	Sections 2.2.8 and 2.3.4
17. If wetlands would be filled or permanently lost, describe proposed measures to compensate for permanent wetland losses.	(Pending Field Surveys)
18. If forested wetlands would be affected, describe proposed measures to restore forested wetlands following construction.	(Pending Field Surveys)
19. Describe techniques to be used to minimize turbidity and sedimentation impacts associated with offshore trenching, if any.	Not Applicable

DRAFT RESOURCE REPORT 2
WATER USE AND QUALITY
TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

DRAFT RESOURCE REPORT 2
WATER USE AND QUALITY

LIST OF ACRONYMS AND ABBREVIATIONS

ATWS	additional temporary workspace
CFR	Code of Federal Regulations
Equitrans	Equitrans, L.P.
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
HDD	horizontal directional drilling
HUC	hydrologic unit code
MVP	Mountain Valley Pipeline
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NRI	Nationwide Rivers Inventory
NWI	National Wetlands Inventory
NWP	Nationwide Permit
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PADEP	Pennsylvania Department of Environmental Protection
PCN	Pre-Construction Notification
Plan	FERC's May 2013 version of the Upland Erosion Control, Revegetation, and Maintenance Plan
Procedures	FERC's May 2013 version of the Wetland and Waterbody Construction and Mitigation Procedures
Project	Equitrans Expansion Project
SPCC Plan	Spill Prevention, Control and Countermeasures Plan
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
WVBPH	West Virginia Bureau for Public Health
WVDEP	West Virginia Department of Environmental Protection
WVDHHR	West Virginia Department of Health and Human Resources

This page intentionally left blank

DRAFT RESOURCE REPORT 2
WATER USE AND QUALITY

Introduction

Equitrans, L.P. (Equitrans) is seeking a Certificate of Public Convenience and Necessity from the Federal Energy Regulatory Commission (FERC), pursuant to Section 7(c) of the Natural Gas Act authorizing it to construct and operate the proposed Equitrans Expansion Project (Project), which is located in three counties in Pennsylvania and in one county in West Virginia. In addition, Equitrans is seeking authorization to abandon an existing compressor station (which will be replaced by a new compressor station) pursuant to Section 7(b) of the Natural Gas Act. Equitrans plans to construct approximately 7.4 miles of pipeline (at two separate locations), a new compressor station, an interconnect with the proposed Mountain Valley Pipeline (MVP), and ancillary facilities to provide timely, cost-effective access to the growing demand for natural gas for use by local distribution companies, industrial users, and power generation in northeastern, Mid-Atlantic, and southeastern markets, as well as potential markets in the Appalachian region.

The Project is designed to transport natural gas from the northern portion of the Equitrans system south to the interconnection with MVP, as well as to existing interconnects with Texas Eastern Transmission, LP and Dominion Transmission, Inc. The Project will provide shippers with the flexibility to transport additional natural gas produced in the central Appalachian Basin to meet the growing demand by local distribution companies, industrial users, and power generation facilities located in local, northeastern, Mid-Atlantic, and southeastern regions of the United States. The Project will also increase system reliability, efficiency, and operational flexibility for the benefit of all Equitrans' customers. The Project is designed to add up to 600,000 dekatherms per day of north-south firm capacity on the Equitrans system.

Environmental Resource Report Organization

In accordance with 18 Code of Federal Regulations (CFR) 380.12(d), Resource Report 2 describes the groundwater, surface water, and wetland resources associated with the Project. Project activities will have minimal temporary impacts to groundwater, surface water, and wetland resources. Potential impacts can be further minimized and mitigated, as discussed in the following sections. Resource Report 2 was collected through review of available technical literature; field reconnaissance from the Project facilities (pending); and consultations with various federal, state, and local public sources (pending); and is prepared and organized according to the FERC *Guidance Manual for Environmental Report Preparation* (FERC 2002). This report is organized into three major sections, with a fourth section listing the sources used to prepare the report. Section 2.1 describes groundwater resources, Section 2.2 describes surface water resources, and Section 2.3 describes wetlands.

2.1 GROUNDWATER RESOURCES

2.1.1 Aquifers

Groundwater includes all subsurface water, specifically the portion within the saturated zone. Groundwater commonly exists within aquifer systems, geologic formations that contain enough saturated, permeable material to hold large quantities of water (USGS 2013). Hydraulically, these systems serve two functions: to store groundwater in reservoirs and to transmit water from recharge to discharge areas (USGS 1995).

Most groundwater in the Project areas flows from higher terrain to nearby channels in local groundwater systems. In this respect, groundwater boundaries often follow surface water boundaries. Influences, such as rock formations, man-made excavations, and large pumping wells, can diverge groundwater from following surface water drainages; however, most groundwater travels in shallow flow paths to the nearest discharge area in a "groundwater basin." As groundwater flows through a groundwater basin, it may pass through distinct geologic formations and rock types. Each of these different geologic units or formations can be considered aquifers. Aquifers may occur a few feet below the land surface, but they are more commonly found at depths greater than 100 feet in Pennsylvania and West Virginia.

The Pennsylvania Project area is within the Pittsburgh Low Plateau hydrogeological setting, consisting of siliciclastic aquifers (USGS 2007). These siliciclastic aquifers consist of sedimentary rocks such as sandstone, siltstone, shale, and conglomerate. The West Virginia Project area falls within the Upper Pennsylvanian Aquifer region (USGS 1995). These aquifers are considered sedimentary bedrock aquifers – nearly horizontal, predominantly shale with sandstone, siltstone, coal, and limestone. They are generally unconfined in hilltop and hillside areas to partly confined and confined in valleys.

Table 2.1-1 lists the types and descriptions of aquifer systems that underlie the Project area.

Table 2.1-1

Aquifers Underlying the Project

County / State (Project Sites)	Aquifer Region, Type	Common Yield Range (gallons per minute)	Common Depth Range (feet)	Typical Water Quality [a/]
Greene, Pennsylvania (H-158/M-80, H-316, Pratt Compressor Station, Redhook Compressor Station)	Pittsburgh Low Plateau, Siliciclastic	5-60 (may exceed 600)	80-200 (may exceed 400)	sandstone layers, soft water, <200 mg/l dissolved solids; shale layers, hard water, 200-250 mg/l dissolved solids
Allegheny, Pennsylvania (H-318)	Pittsburgh Low Plateau, Siliciclastic	5-60 (may exceed 600)	80-200 (may exceed 400)	sandstone layers, soft water, <200 mg/l dissolved solids; shale layers, hard water, 200-250 mg/l dissolved solids
Washington, Pennsylvania (H-318)	Pittsburgh Low Plateau, Siliciclastic	5-60 (may exceed 600)	80-200 (may exceed 400)	sandstone layers, soft water, <200 mg/l dissolved solids; shale layers, hard water, 200-250 mg/l dissolved solids
Wetzel, West Virginia (Webster Interconnect)	Upper Pennsylvanian Aquifer, Sedimentary Bedrock	1-30 (may exceed 200)	50-300 (may exceed 400)	suitable for most uses; moderately hard to hard; alkaline; large iron content [b/]

a/ mg/l = milligrams per liter. From *Pennsylvania Geological Survey* 1999.
b/ Source – USGS 1995
Details for Mobley Tap and the H-305 and H-319 pipeline segments will be provided in the final version of Resource Report 2.

2.1.2 Sole Source Aquifers

The U.S. Environmental Protection Agency (USEPA) defines a sole or principal source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. USEPA guidelines also stipulate that these areas can have no alternative drinking water sources that could physically, legally, or economically supply all those who depend upon the aquifer for drinking water (USEPA 2010).

No sole source aquifers have been designated in West Virginia. Two sole-source aquifers exist in Pennsylvania, but both of these are located in the eastern part of the state, far from the Project area; therefore, no impacts to sole-source aquifers are likely to occur.

2.1.3 Water Supply Wells and Springs

2.1.3.1 Public Wells

Equitrans will consult the Pennsylvania Department of Environmental Protection (PADEP), the West Virginia Department of Health and Human Resources (WVDHHR), and county health departments to obtain information on public wells located within 150 feet of the Project work areas. At present, the PADEP does not have public well information available online. Once obtained, these wells will be included in Table 2.1-2.

Public water supply wells are regulated by each state and their local health departments. As such, these wells are registered, documented, and monitored by the health department. To verify that all public water supply wells have been identified, Equitrans land personnel will survey affected landowners to identify locations of any known public water wells. Additionally, if any public water wells are identified during title reviews, these will be noted as well. If any public water supply well is identified within 150 feet of the construction footprint of the Project, Equitrans will clearly flag the wellhead as a precaution for construction equipment and activities. To further mitigate the potential for any construction activities to impact the well, Equitrans will implement FERC's May 2013 version of the Upland Erosion Control, Revegetation, and Maintenance Plan (Plan; FERC 2013a) and FERC's May 2013 version of the Wetland and Waterbody Construction and Mitigation Procedures (Procedures; FERC 2013b) requirements for stormwater-runoff control and control of petroleum and hazardous materials. In the event that the well is affected, or a significant potential for impact arises, Equitrans will be responsible for notifying the owner/operator of the well. Equitrans will also notify the appropriate PADEP, WVDHHR, or county health departments of the event or potential for impact, and will implement appropriate mitigation.

Table 2.1-2

Public Supply Wells and Springs within 150 feet of Construction Work Area

Source Type / Source Name	County / State	Nearest Project Site	Distance from Construction Work Area (feet)
TBD	TBD	TBD	TBD
TBD	TBD	TBD	TBD

2.1.3.2 Private Wells

It is estimated that over 15 million U.S. households rely on private wells for drinking water (CDC 2014). The location of private wells is not publicly available. Information about private wells located near the Project will be obtained during landowner outreach and field reconnaissance.

2.1.3.3 Springs

Equitrans will acquire data from the Pennsylvania Department of Conservation and Natural Resources (PADCNR): Pennsylvania Topographic and Geologic Survey and West Virginia county health departments for the location of springs within 150 feet of the Project corridor and work areas (PADCNR 2010). Data on springs from the West Virginia county health department (Wetzel-Tyler County Health Department) is pending and will be provided in the final version of Resource Report 2. Additionally, locations of springs will be obtained during civil and environmental field surveys. Known locations of springs within 150 feet of the Project will be listed in Table 2.1-3.

Equitrans will survey affected landowners to request the locations of known springs to help minimize potential impacts to private springs that are used for water supply purposes. If springs are identified that could be affected by construction activities, Equitrans will consult with the appropriate regulatory agencies and with individual landowners in order to minimize impacts.

Table 2.1-3

Springs within 150 feet of Construction Work Area [a/]

Source Type / Source Name	County / State	Nearest Project Site	Distance from Construction Work Area (feet)
TBD	TBD	TBD	TBD
TBD	TBD	TBD	TBD

a/ Pending data.

2.1.3.4 Wellhead or Source Water Protection Areas

The PADEP, the WVDHHR, the West Virginia Bureau for Public Health (WVBPH) Environmental Health Services Environmental Engineering Division, and county health departments will be consulted (pending) to obtain information on wellhead or source water protection areas crossed by the Project route, as well as the location of any such areas located within 150 feet of Project workspaces.

2.1.3.5 Potential Contaminated Groundwater

Equitrans searched federal and state databases to identify documented contaminated sites located within the vicinity of the Project. The search was be based on the sources listed in the American Society for Testing and Materials Standard Practice E 1527-05, Standard Practice for Environmental Site Assessments. All databases were searched to the 0.5-mile distance from the mapped centerline. These sites are included in Table 2.1-4.

Table 2.1-4

Identified Potentially Contaminated Sites within 0.5 miles of the Project

Project Feature	Site Name	Milepost	Cardinal Direction of Nearest Milepost	Distance to Nearest Milepost (feet)
H-158/M-80	Pultorak To Yellow Jacket Pipeline	0	WNW	1120
	Hydra Service Inc	0.2	E	400
	Equitrans Inc/Pratt 47	0.22	NE	1288
	Texas Eastern Trans Lp/Waynesburg Sta	0.22	NE	1551
	Pa Dept Of Corr/Waynesburg Sci	0.22	NE	2157
	Cng Dominion Crayne Comp Sta	0.22	NE	2342
H-316	Pultorak To Yellow Jacket Pipeline	0	WSW	1726
	Hydra Service Inc	0.1	SW	158
	Equitrans Inc/Pratt 47	0.2	NE	424
	Texas Eastern Trans Lp/Waynesburg Sta	0.2	NNE	976
	Pa Dept Of Corr/Waynesburg Sci	0.5	NW	932
	Cng Dominion Crayne Comp Sta	0.5	NW	929
	Right Way Academy Stp	0.8	N	493
	Ags Proj S	2.7	W	2111
H-318	Keith A Thurner Res	3.5	NNE	428
	Iams Sr Stp	4.1	WSW	509
	Equitrans Incorporated Hartson	4.2	SSE	203
Redhook/Pratt	Pultorak To Yellow Jacket Pipeline			
	Hydra Service Inc			
	Equitrans Inc/Pratt 47			
	Texas Eastern Trans Lp/Waynesburg Sta			
	Pa Dept Of Corr/Waynesburg Sci			
	Cng Dominion Crayne Comp Sta			
Webster	Equitrans, L.P.			

Source: USEPA 2015 Envirofacts Search. Multi-system database search. http://www.epa.gov/emefdata/em4ef.home

Notes:

Site names are as presented in EPA's database.

Details for Mobley Tap and the H-305 and H-319 pipeline segments will be provided in the final version of Resource Report 2.

2.1.4 Groundwater Construction and Operations Impacts and Mitigation

Construction, operation, and maintenance of the proposed facilities are not expected to have significant or long-term impacts on groundwater resources. Impacts will be minimized or avoided by implementation of the construction practices outlined in the FERC Plan and Procedures and as described in the mitigation measures detailed below.

2.1.4.1 Aquifer Disturbance Impacts to Water Sources and Mitigation Measures

Ground disturbance associated with typical pipeline construction is generally within 10 feet of the existing ground surface. A depth of 10 feet is above most surficial aquifers utilized as a water source and most existing wells that might be drilled in a shallow aquifer will be cased to at least 20 feet; however, construction activities such as trenching, blasting, dewatering, and backfilling may encounter shallow alluvial aquifers and could cause minor fluctuations in groundwater levels and/or increased turbidity. Most alluvial aquifers exhibit rapid recharge and groundwater movement; therefore, it is likely that such aquifers would quickly re-establish equilibrium and turbidity levels would rapidly subside.

Surficial aquifers can experience minor disturbances from changes in overland water flow and recharge caused by clearing and grading of the right-of-way. The ability of soil to absorb water can be altered through near-surface compaction by heavy construction vehicles. This minor impact would be temporary and is not expected to significantly affect groundwater resources or quality. Impacts to bedrock aquifers are not expected, since construction activities are not likely to occur at a depth which would impact the bedrock aquifers in the Project area. Impacts to surficial aquifers would be minor and temporary and would be avoided by conducting construction and site restoration in accordance with FERC's Plan and Procedures.

2.1.4.2 Aquifer Disturbance Impacts to Groundwater and Mitigation Measures

Construction activities such as trenching, dewatering, and backfilling may affect shallow aquifers and could cause minor fluctuations in groundwater levels and/or increased turbidity. Impacts will be minimized or avoided by implementation of the construction practices outlined in FERC's Plan and Procedures.

2.1.4.3 Blasting Impacts on Water Supply Wells and Mitigation Measures

Although the need for blasting is not expected for the Project at this time, should it be required in an area near water supply wells, blasting may cause temporary changes in water level and turbidity may affect groundwater quality and any bedrock-based water well systems located in close proximity to the Project's construction right-of-way. Also, should blasting become necessary, a Blasting Plan will be provided in a subsequent submittal.

The following measures will be employed to mitigate impacts to water supply wells:

- Blasting will be conducted in a manner to minimize possible impacts on nearby water supply wells. Use of controlled blasting techniques should mitigate the impacts of blasting, and limit rock fracture to the immediate vicinity of the detonation.
- If blasting is conducted within 200 feet of an active water well, Equitrans will conduct a pre-construction evaluation of the well as necessary. The well will be tested for yield and water quality. Upon request by a landowner who had a pre-construction test, a post-construction test will be performed. Landowners will be contacted by an Equitrans representative, and a qualified independent contractor will conduct the testing.
- Equitrans will evaluate, on a timely basis, landowner complaints regarding damage resulting from blasting to wells, homes, or outbuildings. If the damage is substantiated, Equitrans will negotiate a settlement with the landowner that may include repair or replacement.

- No blasting shall be done without prior approval of Equitrans. In no event shall explosives be used where, in the opinion of Equitrans, such use will endanger existing facilities. The Contractor shall obtain Equitrans approval, and provide 24-hour notice prior to the use of any explosives.

2.1.4.4 Contaminated Groundwater Impacts and Mitigation Measures

Although the probability of encountering contaminated groundwater resources during construction is expected to be low, should it occur, it could pose health and safety concerns to construction workers and potentially elevate overall environmental risk through increased exposure. Potential groundwater contamination sources include accidental spills and leaks of heavy equipment fuel, lubrication oil, and hydraulic oil. Materials spilled on the ground could subsequently move into the groundwater and contaminate public water supplies that rely on groundwater.

Equitrans' Environmental Inspectors will be trained to detect direct and indirect evidence of soil and groundwater contamination. If contaminated soil or groundwater is encountered during construction, Equitrans will notify the affected landowner and will coordinate with the appropriate federal and state agencies in accordance with applicable notification requirements.

The following measures will be employed to mitigate potential impacts relating to contaminated groundwater:

- Construction equipment, vehicles, hazardous materials, chemicals, fuels, lubricating oils, and petroleum products will not be parked, stored, or serviced within a 100-foot radius of any private well, artesian well, or spring. Equitrans will install signs along the right-of-way to identify such areas.

- Equitrans will develop a Project Spill Management Plan for implementation in order to protect surface and groundwater resources during construction. The Spill Management Plan will describe preventive measures such as personnel training, equipment inspection, and refueling procedures to reduce the likelihood of spills. It will also include mitigation measures such as containment and cleanup, to minimize potential impacts should a spill occur. Equitrans will minimize the potential impacts of spills of hazardous materials by adhering to this Project-specific Spill Management Plan, which will be available in the field during construction.

- Equitrans will develop an individual Spill Prevention, Control and Countermeasures Plan (SPCC Plan; pending) for each aboveground facility that stores oil in excess of the volumes identified in 40 CFR § 112. Project-specific plans will also be developed for the Redhook Compressor Station in order to protect surface and groundwater resources during operation. Aboveground facilities are identified in Table 1.1-1 of Resource Report 1.

2.2 SURFACE WATER RESOURCES

A combination of data sources will be used to identify surface water resources present in the Project area. These sources include the National Hydrography Dataset (NHD), aerial photo-based maps, U.S. Geological Survey (USGS) topographic maps, National Wetlands Inventory (NWI) Maps, National Resources Conservation Service Web Soil Survey, and results from the field delineations of waters of the United States conducted within the environmental survey corridors, beginning in July of 2015 (pending).

2.2.1 Waterbody Crossings

2.2.1.1 Regional Watersheds

The Project is located in two major watersheds – the Lower Monongahela Watershed in Pennsylvania, and the Little Muskingum-Middle Island Watershed in West Virginia. Within the Lower Monongahela Watershed, the Project will cross three watersheds. Within the Little Muskingum-Middle Island Watershed, the Project will cross one minor watershed basin. Table 2.2-1 identifies these major watersheds and their respective sub-basins by hydrologic unit code (HUC).

Table 2.2-1

Watersheds Within the Project Area

Project Component	Major Watershed (HUC08)	5th Field Watershed (HUC10)	Subwatershed (HUC12)
H-158/M-80	Lower Monongahela	South Fork Tenmile Creek	Ruff Creek, Smith Creek-South Fork Tenmile Creek
H-316	Lower Monongahela	South Fork Tenmile Creek, Upper Monongahela River	Ruff Creek, Muddy Creek, Smith Creek-South Fork Tenmile Creek, Castile Run-South Fork Tenmile Creek
H-318	Lower Monongahela	Lower Monongahela River	Piney Fork-Peters Creek, Fallen Timber Run-Monongahela River
Pratt Compressor Station	Lower Monongahela	South Fork Tenmile Creek	Ruff Creek, Smith Creek-South Fork Tenmile Creek
Redhook Compressor Station	Lower Monongahela	South Fork Tenmile Creek	Ruff Creek, Smith Creek-South Fork Tenmile Creek
Webster Interconnect	Little Muskingum-Middle Island	Fishing Creek	North Fork Fishing Creek

Source: USGS 2015
Details for Mobley Tap and the H-305 and H-319 pipeline segments will be provided in the final version of Resource Report 2.

2.2.1.2 Flood Zones

Equitrans has reviewed Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps to record the locations of 100-year flood zones for areas crossed by the Project route or that contain permanent facilities. The list of flood zones is included in Table 2.2-2.

Table 2.2-2

FEMA 100-year Flood Zones Crossed by the Project

State/County	Feature	Floodplain Waterbody	Milepost	Length Crossed (feet)/Acres
PA/Allegheny	H-318	Kelly Run	1.67	150
WV/Wetzel	Webster	North Fork Fishing Creek	N/A	0.5

Source : FEMA 2015
Note: There are no mapped flood zones crossed by the project in Greene and Washington Counties.

2.2.1.3 Pipeline Crossings

The following waterbody information is based on waterbodies included within the NHD (USGS 2014). Based on NHD, 6 waterbodies would be crossed by the proposed pipeline (see Appendix 2-A, Table 2-A-1). Appendix 2-C Figure 2-C-1, displays NHD waterbodies crossed by the Project. Final waterbody crossing information will be updated based on the final alignment and field delineated features, and provided in an updated Resource Report 2 to be included with Equitrans' application to FERC. Table 2.2-3 is a summary of waterbodies crossed by the Project.

Table 2.2-3

Summary of Waterbodies Crossed by the Project (acres) a/

State	Perennial	Intermittent	Ephemeral	Open Water	Total
West Virginia	0	0	0	0	0
Pennsylvania	7	2	0	0	9
Total	7	2	0	0	9

a/ Table populated with NHD data (USGS 2014). Table will be updated and finalized with field verified data in Resource Report 2 filed with the application to the FERC.

Qualified biologists performed pedestrian surveys of the construction work areas in June and July 2015 to document the presence of wetlands and waterbodies. Using global positioning system units, crews delineated the outer boundaries of each wetland and waterbody and characterized each feature. For all waterbodies, crews recorded the ordinary high water mark as the jurisdictional boundary. Each collected feature received a unique feature identification.

Appendix 2-A (pending) will list each water feature by state, county, milepost, waterbody ID name, USGS name and type (perennial, intermittent or ephemeral), relative size (major, intermediate, or minor), and estimated width at crossing, proposed crossing method, state water quality classification, and any published environmental sensitivity or potential habitat for threatened and endangered species.

The crossings of the various waterbodies and wetlands on the Project route will be accomplished mostly under the U.S. Army Corps of Engineers (USACE) Nationwide Permit (NWP) 12, Utility Line Activities. Equitrans is preparing to file a Pre-Construction Notification (PCN) packet following additional discussions and pre-application meetings held with the Pittsburgh USACE District. Equitrans has received communications from the Pittsburgh USACE district stating that the Project is under their jurisdiction. The crossings of the various waterbodies and wetlands on the Project route will be accomplished predominantly under NWP 12, which is applicable to waters regulated under Section 404 of the Clean Water Act and those regulated under Section 10 of the Rivers and Harbors Act. As part of the PCN process, the District will contact the individual state to obtain Section 401 state water quality certification. This state Section 401 certification is normally issued concurrently with the authorization to proceed under NWP 12.

Within the Commonwealth of Pennsylvania a number of permits are required for Section 401 compliance. Typically, the general permit submittal also determines what additional permits are required, depending on site-specific conditions affecting waters of the state. For natural gas pipeline projects, the PADEP Erosion and Sediment Control General Permit (for earth disturbances to wetlands and waterbodies due to oil and gas exploration, production, processing, treatment operations, or transmission facilities) is required for all projects, where earth disturbance exceeds five acres or disturbance is proposed in a waterbody. Where

dredge or fill activities associated with a pipeline are to occur within streams or wetlands, a Pennsylvania State Programmatic General Permit will be required. If the Project is planned to result in activities that impact the course, current, or cross-section of the waters of the Commonwealth, including wetlands, a PADEP Chapter 105 Water Obstruction and Encroachment Permit will be required as part of the regulatory permitting package.

2.2.1.4 Waterbody Crossing Methods

Construction methods at waterbody crossings will vary with the characteristics of the waterbody encountered and will be performed consistent with permit conditions outlined in the regulatory permit approvals. Equitrans will follow the FERC Procedures to limit water quality and aquatic resource impacts during and following construction. The crossing method planned for each waterbody crossed by the proposed pipeline route is listed in Appendix 2-A. The crossing methods are designed to maintain water flow and minimize changes in waterbody flow characteristics. Typical drawings for the waterbody crossings are provided in Appendix 1-D of Resource Report 1.

Waterbody crossing methods are described in detail in Resource Report 1. The main types of waterbody crossing methods are described as follows:

Open-cut method: An open-cut waterbody crossing is conducted using methods similar to conventional upland open-cut trenching. The pipeline trench is excavated across the waterbody, followed by installation of a prefabricated segment of pipeline, and backfilling of the trench with native material. There are several variations associated with the open-cut method:

- Conventional Open-cut: No effort is made to isolate the stream flow from the construction activities. This method is not expected to be implemented for this project.
- Dam and pump variation: Temporary dams, typically constructed using sandbags and plastic sheeting, are installed upstream and downstream. Following dam installation, pumps are used to dewater and transport the stream flow around the construction work area and trench. This is a dry-ditch method.
- Flume crossing variation: The flow of water is temporarily directed through one or more flume pipes placed over the area to be excavated. This method allows excavation of the pipe trench across the waterbody completely underneath the flume pipes without disruption of water flow in the stream. Stream flow is diverted through the flumes by constructing two bulkheads, using sand bags or plastic dams, to direct the stream flow through the flume pipes. This is a dry-ditch method.
- Horizontal directional drilling (HDD): This method allows for trenchless construction across an area by pre-drilling a hole well below the depth of a conventional pipeline lay and then pulling the pipeline through the pre-drilled borehole.
- Conventional Bore Crossing Method: To complete a conventional bore, two pits will be excavated, one on each side of the feature to be bored. A boring machine will be lowered into one pit, and a horizontal hole will be bored to a diameter equal to the diameter of the pipe (or casing, if required) at the depth of the pipeline installation. The pipeline section and/or casing will then be pushed through the bore to the opposite pit.

Intermediate waterbodies (between 10 and 100 feet wide at water's edge) and minor waterbodies (less than 10 feet wide at water's edge) will be crossed by the open-cut/conventional lay or dry ditch crossing methods

unless otherwise required. Crossings of minor perennial and intermittent streams will be accomplished in accordance with the FERC's Procedures. Dry-ditch waterbody crossing methods include dam and pump, flume, conventional bore, and HDD.

Because of the minimal environmental impact of HDD, this method has been investigated for crossing major and sensitive waterbodies, where practicable. The HDD crossings planned for the Project route are listed in Resource Report 1 and in Appendix 2-A (pending). The HDD method has become a more common crossing technique for large streams and those with particularly sensitive resources associated with the stream where topography allows. A primary advantage to using HDD is that it avoids disturbance of the streambed, stream banks, and upland in the immediate vicinity of the crossing. Hence, the need for re-contouring approaches and stream banks is avoided, as are the challenges of re-establishing vegetation adjacent to these features. A disadvantage of the HDD method is the possibility of inadvertent releases of drilling mud, when the pressurized drilling mud in the borehole finds a fracture or weak area and the drilling fluids discharge into the waterbody and other areas. An HDD Contingency Plan is included in Appendix 1-E to provide guidance on the determination of an HDD failure, alternate crossing methods in the event of an HDD failure, and the prevention, detection, required notifications, and response to inadvertent returns.

Equitrans will follow the FERC Procedures to limit water quality and aquatic resource impacts during and following construction.

2.2.2 Sensitive Waterbodies

Sensitive surface waters include the following:

- Outstanding or exceptional quality waterbodies;
- Waterbodies that contain threatened or endangered species or critical habitat (addressed in Resource Report 3);
- Waterbodies located in sensitive and protected watershed areas;
- Waterbodies that are crossed less than 3 miles upstream of potable water intake structures;
- Waters that do not meet the water quality standards associated with their designated beneficial uses; and
- Rivers on or designated to be added to the Nationwide Rivers Inventory (NRI) or a State River Inventory.

The following sections discuss these sensitive waterbodies.

2.2.2.1 National or State Wild and Scenic Rivers

Equitrans reviewed rivers that are designated as wild and scenic. The different sources viewed include the NRI (NPS 2011) and National Wild and Scenic River System (National Wild and Scenic Rivers System 2015).

The NRI is a listing of more than 3,400 free-flowing river segments in the United States that are believed to possess one or more "outstandingly remarkable" natural or cultural values considered to be of more than local or regional significance (NPS 2011). National Park Service maintains the NRI as a list of river segments that potentially qualify as national wild, scenic, or recreational river areas. All federal agencies must seek to avoid or mitigate actions that would adversely affect any NRI segments. There are no federal wild and scenic rivers identified in the NRI database in the counties where the Project is located (NPS 2011).

The National Wild and Scenic River System was created by Congress in 1968 to preserve certain rivers with outstanding natural, cultural and recreational values in a free-flowing condition. Rivers are designated as wild, scenic or recreational. The Project does not cross federally designated wild and scenic rivers according to the National Wild and Scenic River System (National Wild and Scenic Rivers System 2015).

2.2.2.2 State Designated Use and Sensitive Waters

Pennsylvania and West Virginia have developed their own regulatory system for evaluating, classifying, and monitoring surface waters. Each system includes the assignment of "beneficial use designations" that describe the potential or realized capacity of a waterbody to provide defined ecological benefits and recreational values for residents and visitors. A summary of the use designation system for each state is provided below. State water classifications for waterbodies crossed by the Project route are detailed in Appendix 2-A (pending).

The Commonwealth of Pennsylvania classifies surface waters according to five broad categories of protected water use: aquatic life, water supply, recreation and fish consumption, special protection, and other. The aquatic life category has four sub-categories: cold water fishes, warm water fishes, migratory fishes, and trout stocking (USEPA 2012). The water supply category has five sub-categories: potable water supply, industrial water supply, livestock water supply, wildlife water supply, and irrigation. The recreation and fish consumption category has four sub-categories: boating, fishing, water contact sports, and esthetics. The special protection category has two sub-categories: high quality waters and exceptional value waters. The other category lists navigation as a sub-category. Waters that have not been assigned a designated use are assigned a default designation of: warm water fishes, potable water supply, industrial water supply, livestock water supply, wildlife water supply, irrigation, boating, fishing, water contact sports, and esthetics (PADEP 2006).

The State of West Virginia classifies surface waters according to five broad categories of designated use: public water supply, propagation and maintenance of fish and other aquatic life, water contact recreation, agriculture and wildlife, and water supply for industrial, water transport, cooling and power (USEPA 2014). The public water supply category has four sub-categories: all community domestic water supply systems, all non-community domestic water supply systems, all private domestic water systems, and all other surface water intakes used for human consumption. The propagation and maintenance of fish and other aquatic life category has three sub-categories: warm water fishery streams, trout waters, and wetlands. The agriculture and wildlife category has three sub-categories: irrigation, livestock watering, and wildlife. The water supply for industrial, water transport, cooling and power has four sub-categories: water transport, cooling water, power production, and industrial. Waters that have not been assigned a designated use are assigned a default designation of propagation and maintenance of fish and other aquatic life, and water contact recreation (WVDEP 2009).

Equitrans will identify major (greater than 100 feet wide) or sensitive waterbodies, based on field surveys, USGS topographic maps, a database review, and agency consultations. These waterbodies will be listed in Table 2.2-4.

Table 2.2-4

Major or Sensitive Waterbodies Crossed by the Proposed Pipeline Route

County / State	Waterbody (Field ID Name)	Milepost (Route)	Approximate Width at Crossing (feet)	Crossing Method a/	Sensitive Feature b/
TBD	TBD	TBD	TBD	TBD	TBD
TBD	TBD	TBD	TBD	TBD	TBD

a/ Crossing Method: HDD = horizontal directional drill; OCM = open-cut method

b/ Sensitive Waterbodies include those that are listed as follows:

- Major Crossings (MC) (greater than 100 feet wide at crossing);
- Trout Stocked Fishery (TSF) per 25 Pa. Code §93;
- PFBC Approved Trout Waters (ATW);
- High Quality –Warm Water Fishery (HQ-WWF) per 25 Pa. Code §93.4b(a); and
- Known or potential location for West Virginia Species of Concern as identified by West Virginia Division of Natural Resources (WVDNR).

Pennsylvania uses two designations for high-quality or sensitive waters within PA Code 25, Chapter 93, as follows:

- High Quality Waters – A waterbody that meets one or more of the following criteria: 1) Chemistry: long-term water quality, based on one year of data which exceeds levels necessary to support the propagation of fish, shellfish and wildlife and recreation in and on the water by being better than the water quality criteria; and 2) Biological assessment qualifier: meets the biological component through one of the following assessment qualifiers: a) supports high quality aquatic community based upon EPA's Rapid Bioassessment Protocols; b) surface water supports a high quality aquatic community based upon information gathered using another widely accepted method, c) Department may consider additional biological information; and 3) Class A wild trout stream qualifier: surface water has been designated a Class A wild trout stream by the Fish and Boat Commission.

- Exceptional Value Waters – This beneficial use identifies segments that meets the requirements of a High Quality Water plus one of the following: 1) water is located in a National wildlife refuge or State game propagation and protection area; 2) water is located in a designated State park natural area or State forest natural area, National natural landmark, Federal or State wild river, Federal wilderness are or National recreational area; 3) water is an outstanding National, State, regional or local resource water; 4) water is a surface water of exceptional recreational significance; 5) water achieves a score of at least 92% using RBA; or 6) water is designated as a "wilderness trout stream" by the Fish and Boat Commission following public notice and comment.

West Virginia uses one designation for high-quality or sensitive waters within WV Code, Chapter 47, as follows:

- High Quality Waters – A waterbody that meets one or more of the following criteria: 1) streams designated by the West Virginia Legislature under the West Virginia Natural Stream Preservation Act; 2) stream is listed in West Virginia High Quality Streams, Sixth Edition, prepared by the Wildlife Resources Division, Department of Natural Resources; 3) streams or stream segments which receive annual stockings of trout, but don't support year-round trout populations.

Equitrans will plan the final Project route to minimize impacts to any sensitive and major waterbodies identified.

2.2.2.3 Surface Water Protection Areas and Public Surface Water Supplies

Equitrans will consult the following agencies to determine the location of any potable surface water intakes located within three miles downstream of waterbody crossings: PADEP, WVDHHR, WVBPH, the West Virginia Environmental Health Services Environmental Engineering Division; and county health departments (pending).

Apart from properly managed construction activities, it should be noted that there is typically downstream movement of existing sediments within the streams during large storm events. Additionally, the streams in this area receive significant sediment input from logging operations, accidental erosion, and other non-point sources. Public surface water intake facilities are designed to handle surface waters with heavy sediment loads; therefore, mitigation measures in excess of those specified in FERC's Plan and Procedures to address potential impacts to public water supplies from the construction right-of-way are not proposed.

2.2.2.4 Contaminated Sediments and Impaired Waters

Equitrans has reviewed the National Sediment Quality Survey for information regarding contaminated sediments at all waterbody crossings. None of the watersheds in the Project area are listed as containing areas of probable concern for sediment contamination (USEPA 2004).

Equitrans will review the statewide 303(d) Impaired Waters databases through the West Virginia Department of Environmental Protection (WVDEP) and the PADEP to identify any waterbodies crossed by Project routes that are designated as impaired. Under Section 303(d) of the 1972 Clean Water Act, states, territories, and authorized tribes are required to develop a list of waters that do not meet or are not expected to meet applicable water quality standards. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop action plans emphasizing a reduction of total maximum daily loads to improve water quality. Impaired waterbodies crossed by the Project route will be presented in Table 2.2-5.

Table 2.2-5

Impaired Waterbodies Crossed by the Proposed Pipeline Route

County / State	Approximate Milepost (Lateral)	Waterbody Name (Report Name)	Crossing Type a/	Cause(s) of Impairment
TBD	TBD	TBD	TBD	TBD
TBD	TBD	TBD	TBD	TBD

a/ HDD = horizontal directional drill, OCM = open-cut method

2.2.2.5 Monongahela River and South Fork Tenmile Creek HDD Crossings Waterbody Construction and Mitigation Procedures

At this time, Equitrans has identified two waterbodies that will be crossed via HDD methods: the Monongahela River (to be crossed by the H-318 pipeline) and South Fork Tenmile Creek (to be crossed by the H-316 pipeline). These crossing methods will be described in further detail in the Monongahela River and South Fork Tenmile Creek Site-Specific Crossings Plan prepared for the Project, to be included in

Appendix 2-C. Details of the identified waterbodies are provided in Table 2.2-4. Information about each waterbody's fishery classification is found in Resource Report 3.

2.2.3 Hydrostatic Test Water

The pipeline will be hydrostatically tested to ensure that it is capable of safely operating at the design pressure. Test segments of the pipeline will be capped and filled with water. Surface water used for testing will be drawn through a screened intake. The water in the pipe will be pressurized and held for a minimum of 8 hours prior to being placed in service, in accordance with the U.S. Department of Transportation (USDOT) Pipeline and Hazardous Materials Safety Administration Office of Pipeline Safety requirements identified in 49 CFR Part 192. Any loss of pressure that cannot be attributed to other factors, such as temperature changes, will be investigated. Any leaks detected will be repaired and the segment will be retested.

Upon completion of the test, the water may be pumped to the next segment for testing, or the water may be discharged. The test water will be discharged through an energy-dissipating device in compliance with the National Pollutant Discharge Elimination System (NPDES) permit conditions. Although topography and the availability of test water will determine the length of each test segment, anticipated hydrostatic test water withdrawal locations are listed in Table 2.2-6. Potential discharge locations will be identified at locations shown on the alignment sheets in Appendix 1-A, Alignment Sheets. Final locations will be provided with the Final Resource Report submittal. Test water will contact only new pipe, and no chemicals will be added. An exception would be that if chlorinated water is used for testing, a de-chlorinating agent would be required prior to discharge.

Table 2.2-6

Proposed Hydrostatic Test Water Use

Pipeline Segment	Milepost (from – to)	Water Withdrawal Location (milepost)	Withdrawal Source and Discharge Location	Approximate Volume Required (gallons)
H-318	0-4.21	TBD	TBD	TBD
H-316	0-2.99	TBD	TBD	TBD
H-158	0-0.222	TBD	TBD	TBD
M-80	0-0.222	TBD	TBD	TBD
Details for the H-305 and H-319 pipeline segments will be provided in the final version of Resource Report 2.				

Equitrans will comply with the requirements of the existing general NPDES permits for hydrostatic discharge in Pennsylvania and West Virginia.

For Pennsylvania, hydrostatic test discharge water is covered under NPDES General Permit PAG-10 (Discharges Resulting from Hydrostatic Testing of Tanks and Pipelines). Coverage under this permit includes effluent limitations, discharge requirements, and other standard conditions.

Surface water withdrawal registration may be required by the PADEP if the Project will result in the average withdrawal of 10,000 gallons per day over a 30-day period. If this threshold is reached, the withdrawal must be registered with the PADEP within 30 days of withdrawal and submitted in an annual report to the PADEP (PADEP 2010).

For West Virginia, Equitrans will follow the regulations outlined in their existing NPDES General Permit WV0113069 (Hydrostatic Testing Water- New Pipeline). Coverage under this permit includes effluent limitations, monitoring requirements, and other standard conditions.

If the Project surface water withdrawals exceed 750,000 gallons for the Project in a year's time, a water use registration will be required by the WVDEP. The water use registration form will need to identify all sources of withdrawal and withdrawal amounts per month on the Project for the year. The water use registration must be submitted whether or not the Project is complete, and is reported for the previous year by March 1 (WVDEP 2010).

Test water will be drawn from various sources (see Table 2.2-6) and, after testing, will be discharged to upland areas, typically in the same watershed as the source from which it was obtained. Water discharged over land will be directed through containment structures such as hay bale structures and filter bags. The discharge rate will be regulated using valves and energy dissipation devices to prevent erosion.

Once a segment of pipe has been successfully tested and dried, the test cap and manifold will be removed, and the pipe will be connected to the remainder of the pipeline. No desiccant or chemical additives will be used to dry the pipe. Equitrans will implement Section VII of FERC Procedures regarding hydrostatic testing, as well as any specifications in individual state permit guidelines. HDD segments will be tested before and after installation.

Equitrans has not applied for agency approval for the discharge of hydrostatic test water at this time, pending the receipt of design changes as a result of comments from the FERC or other agencies.

2.2.4 Construction and Operation Impacts and Mitigation

The construction method utilized at each waterbody crossing will vary with the characteristics of the waterbody encountered and will be performed consistent with permit conditions outlined in the regulatory permit approvals.

The preferred crossing method of intermediate waterbodies (between 10 and 100 feet wide at water's edge) and minor waterbodies (less than 10 feet wide at water's edge) at the time of crossing will be dry ditch crossing methods.

Implementation of FERC's Plan and Procedures, specifically with respect to construction time windows, erosion and sedimentation control, bank stabilization, and bank revegetation, will minimize short- and long-term impacts on the waterbodies crossed by the Project route. Equitrans will continue to consult with state agencies during the permitting process to identify additional site-specific mitigation measures.

2.2.4.1 Impacts to Waterbodies from Open-cut Crossing Techniques and Mitigation Measures

Temporary impacts from an open-cut crossing of a flowing waterbody can include a short-term increase in the sediment load in the waterbody during the period of trenching and backfilling, increased vulnerability of stream banks to erosion, stream bank sloughing, increased turbidity and sedimentation downstream of the crossing location and, without proper mitigation, increased potential for sediment input from the construction right-of-way. Sustained periods of exposure to high levels of suspended solids can cause loss of fish egg and fry, reduced natural fish movements, fish vacating areas of high suspended solids, and other adverse impacts on fisheries resources. (Sedimentation-related impacts to fisheries and other aquatic

resources are discussed in greater detail in Section 3.1.4.1 of Resource Report 3.) Additionally, fine silts and colloids that cloud waterbodies could result in diminished visual aesthetics for anglers and other recreational users; these materials could also impact potable water supplies drawn from surface water intakes.

To mitigate these potential impacts, Equitrans will adhere to FERC's Plan and Procedures when constructing across and adjacent to waterbodies. As indicated in Resource Report 1, Section 1.4.1.1, Equitrans proposes an 75-foot-wide construction corridor in wetlands. FERC's Plan and Procedures address the potential that an increase in construction right-of-way may lead to additional adverse impacts to water resources. A portion of the Project route is in an area of high susceptibility for landsliding (Resource Report 6, Figure 6.4-5 displays the Project route in the high landslide incidence area). Equitrans plans to adhere to Section IV.F.1(f) of FERC's Plan for steep sloped terrain that occurs adjacent to intermittent and perennial waterbodies. Appropriate slope stabilization methods shall be employed prior to blasting, if necessary, to protect the area from landslide events during blasting and during long term pipeline utilization. The spacing of temporary and permanent slope breakers would be decreased to accommodate the increase in erosion and sediment transport anticipated by the construction right-of-way, based upon site-specific conditions.

Equitrans will address all permit requirements under the USACE NWP 12 and specific conditions related to obtaining Section 401 state water quality certifications for the two states impacted by the Project.

The waterbody banks will be returned to as near to pre-construction conditions as possible within 24 hours of completion of each open-cut crossing.

The use of HDDs in the Project design for two waterbody crossings will substantially reduce the total amount of temporary and permanent wetland impacts associated with the Project.

2.2.4.2 Impacts to Waterbodies from Potential Releases of Fuels, Lubricants, and Coolants, and Mitigation Measures

The use of heavy equipment to complete pipeline installation across waterbodies may increase the potential for accidental releases of fuels, lubricants, and coolants. Such releases could adversely affect aquatic species and contaminate public water supplies that rely on surface water intakes located downstream of the waterbody crossing.

To mitigate these potential impacts, construction equipment, vehicles, hazardous materials, chemicals, fuels lubricating oils, and petroleum products would not be parked, stored, or serviced within a 100-foot radius of any waterbody. Equitrans will install signs along the right-of-way to identify such areas.

Equitrans has developed an Equitrans Project-specific SPCC Plan (pending) for implementation during construction. The SPCC Plan describes preventive measures such as personnel training, equipment inspection, and refueling procedures to reduce the likelihood of spills. It also includes mitigation measures, such as containment and cleanup, to minimize potential impacts if a spill occurs. Equitrans will minimize the potential impacts of spills of hazardous materials by adhering to this Project-specific SPCC Plan, which will be available in the field during construction.

Equitrans will provide advance notification to the operators of surface water intakes regarding waterbody construction schedules and will notify the operators of any accidental releases of hazardous materials that may affect their water supply.

2.2.4.3 Impacts to Waterbodies from Sediment Runoff and Mitigation Measures

Pipeline construction across waterbodies without proper mitigation could result in increased potential for sediment runoff from the construction right-of-way.

To mitigate these potential impacts, Equitrans will implement FERC's Plan and Procedures, specifically with respect to erosion and sedimentation control, bank stabilization, and bank revegetation, which will minimize impacts related to sediment transport into adjacent waterbodies.

Additionally, the following mitigation measures will be implemented by Equitrans:

- All additional temporary workspaces (ATWS) will be located 50 feet away from the water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land or as noted with a site specific explanation of the conditions.
- Equitrans will limit the amount of vegetation cleared between the waterbody and the ATWS and minimize the amount of extra work space to the greatest extent possible.
- Crossing locations will be aligned as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions allow.
- If the pipeline parallels a waterbody, Equitrans will attempt to maintain at least 10 feet of undisturbed vegetation between the waterbody (and any adjacent wetland, if present) and the construction right-of-way.

Equitrans will continue to consult with state agencies during the permitting process to identify additional appropriate site-specific mitigation measures relating to possible sediment runoff.

2.2.4.4 Impacts to Waterbodies from Hydrostatic Testing Discharges and Mitigation Measures

Potential exists for scour, erosion and potential for sediment transport to adjacent waterbodies from hydrostatic testing discharges.

To mitigate these potential impacts, water discharged over land will be directed into energy dissipation devices, filter bags, or straw bale structures, which will be removed upon completion of testing (Appendix 1-B, Figures and Typical Construction Drawings, of Resource Report 1 will include a drawing of a typical hydrostatic test dewatering structure). The hydrostatic test dewatering structure will be placed on a vegetated upland site that will allow water to flow away from the structure and any nearby work areas. The discharge rate will be regulated using valves and energy dissipation devices to prevent erosion and sediment transport. These measures will minimize scour, erosion, and sediment transport from hydrostatic testing.

2.3 WETLAND RESOURCES

The USACE and USEPA jointly define wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE 1987). FERC defines wetlands as any area that is not in actively cultivated or rotated cropland and that satisfies the requirements of the current federal methodology for identifying and delineating wetlands. Wetlands generally include swamps, marshes, bogs, and similar areas.

The Ramsar Convention on Wetlands is an international treaty with a mission statement of "conservation and wise use of all wetlands through local, regional and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world" (Ramsar 2010a). The convention sets criteria for inclusion on the List of Wetlands of International Importance, based primarily on remarkable biological and ecological value and function. The Project area does not include any wetlands which are listed on the Ramsar List of Wetlands of International Importance (Ramsar 2010b).

2.3.1 Wetland Crossings

The wetlands crossing summary to be discussed in this section will be a compilation of wetland delineations to be conducted specifically for the Project, beginning in July 2015. Appendix 2-B will list the individual wetlands within the construction right-of-way, within ancillary sites, and crossed by access roads for the proposed pipeline routes. During the wetland delineation field surveys, all wetlands within the study corridor will be identified. NWI Maps will be provided in Appendix 2-C of this report.

2.3.2 Types of Wetlands

The wetland classification system used follows the naming convention found in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin 1979). The types and total acreages of wetlands found within the study corridor were identified during the 2015 field surveys.

Table 2.3-1 provides a summary of wetland centerline crossing length and construction impact acreages for each wetland type within the construction right-of-way in each state and county.

Table 2.3-1

Summary of Wetlands Crossed by the Project (acres)

State	Total Wetlands Affected	PEM	PSS	PFO Construction Impacts	PFO Operational Impacts
West Virginia	TBD	TBD	TBD	TBD	TBD
Pennsylvania	TBD	TBD	TBD	TBD	TBD
Total	TBD	TBD	TBD	TBD	TBD

Acres will be updated and finalized with field verified data in Resource Report 2 filed with Equitrans' application to the FERC.
PSS = Palustrine scrub-shrub
PFO = Palustrine forested

2.3.3 Wetland Crossing Methods

Crossing of jurisdictional wetlands will be completed in accordance with state and federal permits and FERC's Plan and Procedures and as approved by the FERC. Wetland crossing construction methods are discussed in greater detail in Resource Report 1.

Operation of construction equipment in wetlands will be limited to that needed to clear the right-of-way, dig the trench, fabricate the pipe, install the pipe, backfill the trench, and restore the right-of-way. Equitrans will segregate the topsoil up to one foot in depth in wetlands where hydrologic conditions permit this practice.

Restoration and monitoring of wetland crossings will be conducted in accordance with FERC's Plan and Procedures to ensure successful wetland revegetation. In accordance with FERC's Procedures, fuel will not be stored within 100 feet of wetlands or other waterbodies.

Hydrological conditions along the construction corridor in areas proposed for conventional open ditch construction will likely dictate the use of either conventional open ditch lay or open ditch push/pull lay methods. Selection of the most appropriate method will depend on site-specific weather conditions, inundation, soil saturation, and soil stability at the time of construction. The conventional open ditch lay method will be the most frequently used technique for installation of the pipeline in wetlands. The push/pull lay method will be used in inundated or saturated wetland areas that necessitate this technique. Selection of the push/pull method will be decided during construction by the construction supervisor and/or the Equitrans representative depending on the conditions at the time of construction.

Equitrans has considered the need to avoid potential impacts to wetlands in selecting its proposed route. Where wetlands cannot be avoided, Equitrans will seek to minimize potential impacts through the use of wetland construction procedures. Equitrans is committed to constructing the Project in accordance with FERC's Plan and Procedures to the maximum extent practical. Equitrans will request site-specific variances, if necessary, to Section VI.B.1 (location of extra workspaces in wetlands) of the FERC Procedures providing a location-specific justification for each requested variance.

2.3.3.1 Unsaturated Wetland Crossings

In crossing unsaturated wetlands (wetlands without standing water or saturated soils), construction will be similar to the typical upland construction described in Resource Report 1, with some exceptions. One exception is that only one traffic lane will be provided for construction equipment in unsaturated wetlands. Prior to construction, Equitrans will provide site-specific information for each wetland crossing that cannot be constructed within the 75-foot limitation prescribed in the FERC Procedures. If normal construction equipment activity causes rutting or mixing of wetland topsoil and subsoil, low-ground-pressure equipment will be used, or temporary equipment mats will be installed to allow passage of equipment with minimal disturbance of the surface and vegetation. Trees will be cut to grade, but stumps will only be removed within 15 feet of the edge of the pipe trench, or where safety concerns dictate otherwise. Topsoil over the pipe trench will be segregated from subsoils. A vegetation buffer zone will be left between the wetland and the upland construction areas, except for the pipe trench and travel lane. Erosion control measures such as silt fences, interceptor dikes, and hay bale structures will be installed and maintained to minimize sedimentation within the wetland. Trench plugs will be installed where necessary to prevent the unintentional draining of water from the wetland. Upon completion of construction, the right-of-way will be restored and a 10-foot-wide strip centered on the pipeline will be maintained in an herbaceous state.

2.3.3.2 Saturated Wetland Crossings

For the purposes of this report, saturated wetlands include wetlands with standing water, but not those wetlands that are constantly or regularly completely submerged. Topsoil segregation will not be practical in saturated wetlands. Otherwise, construction will be similar as described for unsaturated wetlands to provide for anticipated widths of the pipeline trench and trench spoil areas. Equipment mats or timbers will be used to facilitate equipment movement through and work within the wetland. Equipment not associated with the pipeline construction within the wetland will be allowed to pass through the wetland when there is no other reasonable access, as provided in the FERC Procedures.

2.3.4 Construction and Operation Impacts and Mitigation

Temporary construction impacts in wetlands may include loss of herbaceous and scrub-shrub vegetation, wildlife habitat disruption, soil disturbance associated with grading, trenching, and stump removal, sedimentation and turbidity increases, and hydrological profile changes. Impacts to forested wetlands may include long-term conversion to emergent and/or scrub-shrub wetland types through tree removal. In this case, no permanent loss of wetlands will occur but functional changes to the wetland community may result.

ATWS areas will be required near wetlands to stage construction, fabricate the pipeline, and store materials. ATWS areas have, to the extent practicable, been located in upland areas a minimum of 50 feet from the wetland edge. Known locations of ATWS within 50 feet of wetlands or waterbodies are presented in Resource Report 8.

Fuel will not be stored or equipment refueled within 100 feet of wetlands or other waterbodies. Additionally, Equitrans will obtain and adhere to the requirements of the permits related to wetland impacts for the Project.

Field wetland delineations and surveys are currently underway and will be used to determine if the aboveground facilities will result in any permanent impacts to wetlands

2.3.4.1 General Wetland Mitigation Strategies

- In addition to wetlands crossing avoidance or minimization during route design and selection of appropriate crossing techniques, Equitrans will limit wetland impacts by adherence to FERC's Plan and Procedures and applicable permit requirements. Trees will be cut to grade, but stumps will only be removed directly over the trenchline, or where safety concerns dictate otherwise. This will allow existing vegetation to recover more rapidly in the remainder of the right-of-way once the equipment mats and spoil piles have been removed.
- By closely paralleling or overlapping existing pipeline and other utility rights-of ways for the majority of its proposed route, Equitrans minimizes wetland impacts by utilizing previously disturbed land and reducing habitat fragmentation.
- As described in FERC's Plan and Procedures, Equitrans will develop a project-specific wetland restoration plan in consultation with the appropriate land management or state agencies. Equitrans will seed wetland areas with an annual seed mix following the written recommendations for seed mixes, rates, and dates obtained from the appropriate soil conservation authorities. Topsoil segregation in unsaturated wetlands will preserve the native seed source, which will facilitate regrowth of wetland herbaceous and/or woody plant species through natural succession.
- As indicated in Resource Report 1, Section 1.3.1.2, Equitrans proposes a 75-foot construction right-of-way noted in FERC's Plan and Procedures.

2.3.4.2 Impacts to Herbaceous and Scrub-Shrub Wetland Vegetation and Mitigation Measures

Temporary construction impacts in wetlands may include loss of herbaceous and scrub-shrub vegetation. Wetland crossings have been avoided or minimized by closely paralleling or overlapping existing pipeline and other utility rights-of ways in order to utilize previously disturbed land and reduce habitat fragmentation. In addition, Equitrans will limit wetland impacts by adherence to FERC's Plan and Procedures and all applicable permit requirements. Equitrans will generally limit the construction right-of-

way width through wetlands to 75 feet and will utilize previously cleared right-of-way to minimize vegetation clearing to the extent practicable.

Operation of construction equipment in wetlands will be limited to that needed to clear the right-of-way, excavate the trench, fabricate the pipe, install the pipe, backfill the trench, and restore the right-of-way. Equitrans will segregate the topsoil up to one foot in depth in unsaturated wetlands.

After the pipeline is installed in the trench, Equitrans will backfill the ditch with the spoil excavated from the wetland. If dewatering of the trench is necessary, it will be conducted in a manner designed to prevent heavily silt-laden water from entering a waterbody or undisturbed portions of the wetland. Following backfilling, the segregated topsoil will be spread over the area from which it was stripped and restored to approximate pre-construction contour. Equitrans will remove any timber riprap, timber mats, or other material from the wetland after construction. Equitrans will seed wetland areas that are not inundated with water in accordance with FERC's Plan and Procedures to expedite revegetation. No lime, fertilizer, or mulch will be used in wetland areas unless required in writing by the appropriate land management or state agency.

2.3.4.3 Impacts to Wetland Plant Species and Wetland Functional Values and Mitigation Measures

Soil disturbance associated with grading, trenching, and stump removal during wetland crossings using conventional open-cut techniques could adversely affect the restoration of wetland plant species and wetland functional values following construction.

In order to avoid impacts to wetland plants and functional values, Equitrans will segregate the topsoil in the ditch line only up to one foot in depth in wetlands where hydrologic conditions permit this practice. Pre-construction wetland conditions, including contours in the construction right-of-way, will be restored to the greatest extent possible. Topsoil segregation in unsaturated wetlands will preserve the native seed source, which will facilitate regrowth of herbaceous vegetation once pipeline installation is complete.

In riparian wetland areas, Equitrans will cut the existing vegetation to just above ground level, leaving existing root systems intact. Cut vegetation will be removed from these areas for disposal. In unsaturated wetlands, up to one foot of topsoil will be stripped over the trench and separated from the subsoil. Equitrans will limit the pulling of stumps to minimize disturbance. Excavated stumps will be removed from the wetland.

Construction in saturated wetland areas will minimize disturbance by restricting access in sensitive wetlands to equipment, vehicles, and workers needed for actual pipeline installation, and by limiting the number of crossing events.

Erosion control techniques, including revegetation and deployment of silt fences, slope breakers, trench plugs, rip-rapping, terracing, and netting, will be used in upland areas to restrict sediment runoff into adjacent wetlands.

2.3.4.4 Impacts to Forested Wetlands and Mitigation Measures

After the pipeline is constructed, Equitrans will periodically remove woody species from wetlands to facilitate post-construction inspections along the permanently maintained pipeline right-of-way. USDOT

regulations limit the re-growth of trees over the pipeline. This operational requirement could lead to the long-term conversion of forested wetlands to emergent and/or scrub-shrub wetland types.

Crossing of the pipeline through forested wetlands has been minimized to the maximum extent practicable through Project design where appropriate and practical. Clearing within forested wetlands will be limited in right-of-way width, and the right-of-way will be maintained in such a way that only the minimum width needed for pipeline protection and surveillance is maintained, in an effort to reduce permanent impacts to forested wetlands.

Equitrans will maintain no more than a 10-foot-wide strip centered over the pipeline in an herbaceous state, and will only remove woody vegetation greater than 15 feet in height within a 30-foot-wide strip centered over the pipeline. This will result in a 10-foot-wide strip of herbaceous vegetation centered over the pipeline, flanked by a potential shrub strip of 10 feet in width on either side.

2.3.4.5 Impacts to Adjacent Wetlands from Hydrological Profile Changes and Mitigation Measures

Hydrological profile changes from construction activities could adversely affect undisturbed wetlands adjacent to the construction right-of-way. In order to avoid these impacts, pre-construction wetland conditions including contours in the construction right-of-way will be restored to the extent possible.

2.3.4.6 Impacts to Adjacent Wetlands from Accidental Spills and Mitigation Measures

During construction, accidental spills of fuels, oils or other hazardous materials during wetland crossings could adversely affect adjacent undisturbed wetlands or reduce the successful restoration of wetlands in the construction right-of-way.

In order to avoid these impacts, Equitrans has developed a Project-specific SPCC Plan (pending) for implementation during construction. The SPCC Plan describes preventive measures such as personnel training, equipment inspection, and refueling procedures to reduce the likelihood of spills. It also includes mitigation measures, such as containment and cleanup, to minimize potential impacts should a spill occur. Equitrans will minimize the potential impact of spills of hazardous materials by adhering to this Project-specific SPCC Plan, which will be available in the field during construction. Fuel will not be stored or equipment refueled within 100 feet of wetlands or other waterbodies.

2.4 REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U. S. Department of the Interior, Fish and Wildlife Service, Washington, D.C.

FERC (Federal Energy Regulatory Commission). 2002. Guidance Manual for Environmental Report Preparation. August. Available on the web at: https://www.ferc.gov/industries/gas/enviro/erpman.pdf.

FERC. 2013a. Upland Erosion Control, Revegetation, and Maintenance Plan. Available on the web at: http://www.ferc.gov/industries/gas/enviro/plan.pdf.

FERC. 2013b. Wetland and Waterbody Construction and Mitigation Procedures. Available on the web at: http://www.ferc.gov/industries/gas/enviro/procedures.pdf.

FEMA (Federal Emergency Management Agency). 2015. Flood Map Service Center. Online at: http://msc.fema.gov/portal. Accessed July 2015.Kenny, J.F., Barber, N.L., Hutson, S.S., Linsey, K.S., Lovelace, J.K., and Maupin, M.A., 2009, Estimated use of water in the United States in 2005: U.S. Geological Survey Circular 1344, 52 p.

National Wild and Scenic Rivers System. 2015. Available at http://www.rivers.gov/index.php. Accessed July 2015.

NPS (National Park Service). 2011. Nationwide Rivers Inventory. Available at http://www.nps.gov/ncrc/programs/rtca/nri/index.html. Last updated August 19, 2011. Accessed July2015.

PADCNR (Pennsylvania Department of Conservation and Natural Resources). 2010. PA Topographic and Geologic Survey. 2010. PA GWIS Well and Spring Data. Available at http://www.dcnr.state.pa.us/topogeo/index.aspx

PADEP. 2010. Dave Jostenski, Bureau of Watershed Management- Water Use Assessment Section. September 1, 2010 telephone conversation with Benjamin Otto (URS) concerning surface water withdrawal for hydrostatic testing.

Ramsar (The Ramsar Convention on Wetlands). 2010a. Mission Statement. http://www.ramsar.org/cda/en/ramsar-home/main/ramsar/1_4000_0__. Accessed August 27, 2010.

Ramsar. 2010b. The Ramsar Sites Information Service (database). http://ramsar.wetlands.org/Database/Searchforsites/tabid/765/language/en-US/Default.aspx. Accessed August 27, 2010.

USACE (U.S. Army Corps of Engineers). 1987. Wetlands Research Program Technical Report Y-87-1: Wetland Delineation Manual.

USEPA (U.S. Environmental Protection Agency). 2004. The Incidence and Severity of Sediment Contamination in Surface Waters of the United States, National Sediment Quality Survey: Second Edition. Available at http://water.epa.gov/polwaste/sediments/cs/report2004_index.cfm

USEPA. 2010. Designated Sole Source Aquifers in EPA Region 3. http://www.epa.gov/reg3wapd/drinking/ssa/index.htm. Accessed August 11, 2010.

USEPA. 2012. Repository of Documents: Pennsylvania. Chapter 93. Water Quality Standards. Available online at: http://water.epa.gov/scitech/swguidance/standards/upload/pawqs_chapter93.pdf; accessed June 9, 2015.

USEPA. 2014. Repository of Documents: West Virginia. Title 47, Legislative Rule. Series 2, Requirements Governing Water Quality Standards. http://water.epa.gov/scitech/swguidance/standards/wqslibrary/upload/wv_require.pdf; accessed June 5, 2015.

USEPA. 2015. Envirofacts Search. Multi-system database search. Available at http://www.epa.gov/enviro/facts/ ef_overview.html. Accessed July 16, 2015.

USFWS (U.S. Fish and Wildlife Service). 2015. National Wetlands Inventory. Available at http://www.fws.gov/wetlands/ Last updated July 9, 2015. Accessed July 15, 2015.

USGS (U.S. Geological Survey). 1995. Location and Site Characteristics of the Ambient Ground-water-Quality-Monitoring-Network in West Virginia. Available at http://pubs.usgs.gov/of/1995/0130/report.pdf

USGS. 2014. National Hydrography Dataset. Available at http://nhd.usgs.gov/index.html. Last updated January 13, 2014. Accessed July 2015.

USGS. 2015. Watershed Boundary Dataset. Available at: http://nhd.usgs.gov/wbd.html Last Updated July 16, 2015. Accessed July 2015.

WVDEP (West Virginia Department of Environmental Protection),. 2009. Water Resources. Title 47, Legislative Rule. Series 2, Requirements Governing Water Quality Standards. www.epa.gov/waterscience/standards/wqslibrary/wv/wv_require.pdf. Accessed August 23, 2010.

This page intentionally left blank

Equitrans Expansion Project

Docket No. PF15-22

Resource Report 2

Appendix 2-A
Waterbody Crossing Tables

This page intentionally left blank

Table 2-A-1

Watersheds Crossed by EEP

Project Feature	State/County	HUC 2	Region	HUC8	Sub-Basin	HUC10	Watershed	MP Begin	MP End
H-158/M80	PA/Greene	5	Ohio Region	5020005	Lower Monongahela	502000503	South Fork Tenmile Creek	0	0.22
H-316	PA/Greene	5	Ohio Region	5020005	Lower Monongahela	502000503	South Fork Tenmile Creek	0	2.99
H-318	PA/Allegheny	5	Ohio Region	5020005	Lower Monongahela	502000508	Lower Monongahela River	0	3
	PA/Washington	5	Ohio Region	5020005	Lower Monongahela	502000508	Lower Monongahela River	3	4.21

Source: USGS NHD Watershed data: http://nhd.usgs.gov/wbd.html (USGS 2015)
Details for the H-305 and H-319 pipeline segments will be provided in the final version of Resource Report 2.

Table 2-A-2

Desktop Data Waterbodies Crossed by EEP

Project Feature	State/ County	Waterbody ID	Waterbody Name	Milepost	Flow Type	Crossing Method	FERC Classification	Approximate Crossing Length	Classification	Fishery Type
H-158/M80	PA/ Greene		Nameless Tributary to South Fork Tenmile Creek	0.6	460	TBD	TBD	TBD	TBD	TBD
H-316	PA/ Greene	1185601	Ruff Creek	1.32	558	TBD	TBD	TBD	TBD	TBD
		1193409	South Fork Tenmile Creek	2.28	558	TBD	TBD	TBD	TBD	TBD
			Nameless Tributary to South Fork Tenmile Creek	2.79	460	TBD	TBD	TBD	TBD	TBD
H-318	PA/ Allegheny	1178337	Kelly Run	1.69	460	TBD	TBD	TBD	TBD	TBD
		1170695	Bunola Run	2.775	460	TBD	TBD	TBD	TBD	TBD
		1209053	Monongahela River	2.99	558	TBD	TBD	TBD	TBD	TBD
	PA/ Washington	1179741	Lobbs Run	4.17	460	TBD	TBD	TBD	TBD	TBD

Source: USGS 2014
Details for the H-305 and H-319 pipeline segments will be provided in the final version of Resource Report 2.

Equitrans Expansion Project

Docket No. PF15-22

Resource Report 2

Appendix 2-B
Wetland Crossing Tables

This page intentionally left blank

Table 2-B-1

NWI Wetlands Crossed by EEP

Project Feature	State/ County	Wetland ID	NWI Classification	Milepost	Length of Crossing	Operations Impacts (acres)	Construction Impacts
H-316	PA/ Greene	Ruff Creek	R5UBH (Riverine)	1.31	0.014	0.08402	0.184655
		South Fork Tenmile Creek		2.26	0.025	0.153539	0.339868
H-318	PA/ Allegheny	Monongahela River	R2UBH (Riverine)	2.905	0.09	0.555648	1.110858
	PA/ Washington			2.995	0.077	0.467971	0.935025

Source: USFWS 2015
Details for the H-305 and H-319 pipeline segments will be provided in the final version of Resource Report 2.

This page intentionally left blank

Equitrans Expansion Project

Docket No. PF15-22

Resource Report 2

Appendix 2-C
Waterbody and Wetland Maps
(Attached Separately)

Figure 2-C-1, Sheets 1-#, Wetland and Waterbodies Crossed by the Project
Figure 2-C-2, Monongahela River and Tenmile Creek Site-Specific Crossings Plans

This page intentionally left blank