Federal Energy Regulatory Commission
Office of Energy Projects, Division of Gas-Environment & Engineering

ENVIRONMENTAL ASSESSMENT REPORT

Name of Applicant: Equitrans, L.P. (Equitrans)

Date Filed: 7/10/2015	**Docket No:** CP15-528-000
Type: Sections 7 (b) and (c) – Abandonment and Construction of Facilities	**Cost:** $93,602,142

Facilities:

Equitrans' TP-371 Pipeline Replacement Project would include construction of 20.9 miles of 20-inch-diameter natural gas pipeline and related facilities, and abandonment of the adjacent 12-inch-diameter pipeline. Minor aboveground facilities would also be constructed, relocated, or abandoned. The project would be located in Armstrong and Indiana Counties, Pennsylvania.

Equitrans' project purpose is to upgrade the existing system to allow for in-line inspection and improve operational efficiency and reliability. No change in the transportation capacity of the existing pipeline system is proposed.

Environmental Impact -- Conclusions:

___ **Categorical Exclusion**

___ **Environment Not Involved**

_X_ **Environment Complete**

___ **Deficiency Letter Required**

___ **EA/EIS Required**

___ **No NOI Required**

___ **NOI Required**

Environmental Considerations or Comments:

See the attached environmental assessment.

Prepared by:	**Date:**	**Approved by Branch Chief:**	**Date:**
Robert J. Kapka	2/29/2016	Shannon K. Jones	2/29/2016

Federal Energy Regulatory Commission

Office of Energy Projects

February 2016

EQUITRANS, LP **FERC Docket No. CP15-528-000**

TP-371 PIPELINE REPLACEMENT PROJECT

ENVIRONMENTAL ASSESSMENT

Washington, DC 20426

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TP-371 PIPELINE REPLACEMENT PROJECT

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TECHNICAL ABBREVIATIONS AND ACRONYMS

ACM	asbestos-containing material
ADP	Allegheny Defense Project
AMA	Appalachian Mountain Advocates
AMA, et al.	AMA, Center for Biological Diversity, and Southern Environmental Law Center
APE	Area of Potential Effect
ATWS	additional temporary workspace
AQCR	Air Quality Control Region
BGEPA	Bald and Golden Eagle Protection Act
CAA	Clean Air Act
Certificate	Certificate of Public Convenience and Necessity
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2e}	carbon dioxide equivalents
COE	U.S. Army Corps of Engineers
Commission	Federal Energy Regulatory Commission
Consol	Consol Energy Inc.
CWA	Clean Water Act
dBA	decibels on the A-weighted scale
DOT	U.S. Department of Transportation
EA	environmental assessment
EI	environmental inspector
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
Equitrans	Equitrans, Limited Partnership
Equitrans, LP	Equitrans, Limited Partnership
Existing Segment	abandonment of 20.8 miles of existing 12-inch-diameter pipeline
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FWS	U.S. Fish and Wildlife Service
GHG	greenhouse gases
HAP	hazardous air pollutant
HCA	high consequence area
HDD	horizontal directional drill
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
m^3	cubic meter
MAOP	maximum allowable operating pressure
MBTA	Migratory Bird Treaty Act

MLV	mainline valve
MOU	Memorandum of Understanding
MP	milepost
MVP	Mountain Valley Pipeline
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NGA	Natural Gas Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent to Prepare an Environmental Assessment for the Planned TP-371 Pipeline Replacement Project and Request for Comments on Environmental Issues
NO_x	nitrogen oxides
N_2O	nitrous oxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	noise sensitive area
NWI	National Wetlands Inventory
O_3	ozone
OEP	Office of Energy Projects
OSHA	Occupational Safety and Health Administration
OVEC	Ohio Valley Environmental Coalition
PAC	Pennsylvania Administrative Code
PADEP	Pennsylvania Department of Environmental Protection
PCB	polychlorinated biphenyls
PDCNR	Pennsylvania Department of Conservation and Natural Resources
PennDOT	Pennsylvania Department of Transportation
PGDC	Pennsylvania Geospatial Data Clearinghouse
PHMC BHP	Pennsylvania Historical and Museum Commission – Bureau of Historic Preservation
PEM	palustrine emergent
PFBC	Pennsylvania Fish and Boat Commission
PFO	palustrine forested
PGC	Pennsylvania Game Commission
PHMSA	Pipeline and Hazardous Materials Safety Administration
Plan	FERC's Upland Erosion Control, Revegetation, and Maintenance Plan
$PM_{2.5}$	particles with an aerodynamic diameter less than or equal to 2.5 microns
PM_{10}	particles with an aerodynamic diameter less than or equal to 10 microns
PNHP	Pennsylvania Natural Heritage Program
Procedures	FERC's Wetland and Waterbody Construction and Mitigation Procedures
Project	TP-371 Pipeline Replacement Project
ppb	parts per billion

PPE	personal protective equipment
ppm	parts per million
PSS	palustrine shrub/scrub
Replacement Segment	construction of 20.8 miles of new 12-inch-diameter pipeline
ROW	right-of-way
Secretary	Secretary of the Federal Energy Regulatory Commission
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
SR	state road
SRBC	Susquehanna River Basin Commission
SWPA	source water protection area
TP-371 Project	TP-371 Pipeline Replacement Project
tpy	tons per year
TSCA	Toxic Substances Control Act
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
VOC	volatile organic compounds
µg	microgram

A. PROPOSED ACTION

7. Introduction

On July 10, 2015, Equitrans, Limited Partnership (Equitrans, LP or Equitrans) filed an application with the Federal Energy Regulatory Commission (FERC or Commission) in Docket No. CP15-528-000. Equitrans seeks a Certificate of Public Convenience and Necessity (Certificate) under Section 7(c) of the Natural Gas Act (NGA) to construct and operate a natural gas transmission pipeline and related facilities in Pennsylvania, and permission under Section 7(b) of the NGA to abandon in place an existing segment of pipeline. Equitrans' proposed facilities, referred to as the TP-371 Pipeline Replacement Project (TP-371 Project or Project), would include construction of 20.8 miles of 20-inch-diameter natural gas pipeline (Replacement Segment) and related facilities, and the abandonment of approximately 20.8 miles of existing 12-inch-diameter pipeline (Existing Segment). No change in the transportation capacity of the existing pipeline system is proposed.

We[1] prepared this environmental assessment (EA) in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations for implementing NEPA (Title 40 of the Code of Federal Regulations [CFR] Parts 1500-1508), and the Commission's implementing regulations under Title 18 CFR Part 380. The FERC is the lead federal agency for the preparation of this EA; no additional agencies have requested participation as a cooperating agency for the preparation of this EA.

The assessment of environmental impacts is an integral part of FERC's decision on whether to issue Equitrans a Certificate to construct and operate the proposed facilities. Our principal purposes in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment that would result from the proposed action;
- assess reasonable alternatives to avoid or minimize adverse effects to the environment; and
- identify and recommend mitigation measures, as necessary, to minimize environmental impacts.

The EA will be used by the Commission in its decision-making process to determine whether to authorize Equitrans' proposal. Approval would be granted if, after consideration of both environmental and non-environmental issues, the Commission finds that the TP-371 Project is in the public interest.

2. Public Review and Comment

On August 19, 2015, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed TP-371 Replacement Project and Request for*

[1] "We," "us," and "our" refer to the environmental staff of the Office of Energy Projects (OEP).

Comments on Environmental Issues (NOI). The NOI was published in the Federal Register and was mailed to 554 interested parties, including federal, state, and local government representatives and agencies; elected officials; affected landowners; environmental and public interest groups; potentially interested Native American tribes; other interested parties; and local libraries, newspapers, and radio stations. The NOI also established a scoping period and requested that the public provide written comments on specific concerns about the proposed TP-371 Project or issues that should be considered during the preparation of the EA.

The Commission received five comment letters during the public scoping period (August 19, 2015 through September 27, 2015) in response to the NOI. The environmental comments received in response to the NOI are summarized below and further addressed, as applicable, in the relevant sections of this EA.

The Pennsylvania Department of Conservation and Natural Resources (PDCNR), Bureau of Recreation and Conservation raised concerns over local community park and recreation projects that receive agency funding, as legislation restricts activities within the boundaries of these areas. Parks and recreational areas are discussed in section B.5.4.

One landowner provided concerns over the removal of trees on his property, compensation for those trees, and the increased potential for motorized vehicles to access and use the proposed maintained right-of-way. The FERC does not have the authority to dictate the terms of easement agreements; rather, the applicant and landowner negotiate the terms of the easement agreement. Equitrans negotiated directly with the landowner to address the concern and executed an easement agreement in November, 2015.

The Allegheny Defense Project (ADP) filed a motion to intervene, citing concerns on habitat fragmentation (see sections B.3.1 and B.11) and the increasing trend in shale gas drilling. Production and gathering activities are not regulated by the FERC, but are overseen by the affected region's state and local agencies with jurisdiction over the management and extraction of the shale gas resource. ADP also comments that FERC must consider the cumulative impact of gas drilling in the Marcellus and Utica shale formations. For consideration under NEPA, cumulative impacts do not require a causal connection, but must be reasonably foreseeable. Furthermore, CEQ has explained that "it is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful" (CEQ 1997). Consistent with CEQ guidance, in order to determine the scope of a cumulative impacts analysis for the Project, we established a "region of influence" in which various resources may be affected by both the proposed Project and other past, present, and reasonably foreseeable future actions. Furthermore, we related the scope of our analysis to the magnitude of the environmental impacts of the proposed action. Cumulative impacts are addressed in section B.11 of this EA and include energy development projects identified within the region of influence for resources affected by the Project.

ADP and the Ohio Valley Environmental Coalition (OVEC) filed joint comments, including incorporation by reference to those comments submitted by the Appalachian Mountain Advocates (AMA), Center for Biological Diversity, and Southern Environmental Law Center (AMA et al.) for Equitrans' Mountain Valley Pipeline (MVP) Project (filed under Docket No. PF15-3-000).

AMA et al. recommended that the FERC develop a programmatic environmental impact statement (EIS) to determine impacts from MVP, the Atlantic Coast Pipeline, the Appalachian Connector Pipeline, and the WB Xpress Project; however, as the proposed Project was not mentioned, that comment is not considered herein. AMA et al. recommends that FERC consider a pipeline's impacts on the area's aesthetic, historic, cultural, economic, and social environment, as well as its property values. Although these aspects of the human environment are discussed in sections B.5.5, B.7.2, B.7, B.6, B.6, and B.6.4, respectively, AMA et al. have focused their comments on the construction of a new pipeline within a rural area. The proposed TP-371 Project includes the replacement of an existing pipeline segment adjacent to and partially overlapping the existing right-of-way for that segment, not construction of a new, greenfield pipeline; therefore, the character of the environment would not significantly change from previous conditions. There would be no increase in the volumes of gas transported on the Replacement Segment. Additional concerns noted by AMA et al. including pipeline safety (see section B.9); climate change (see section B.11.8); impacts from increases in shale gas drilling, which as previously noted is not under FERC's jurisdiction, and is not an indirect effect of the Project (see section B.11); socioeconomic impacts (see section B.6); impacts on karst systems (see section B.1.1), surface waters (see section B.2.2), wildlife (see section B.3.3), and federally listed species (see section B.4); forest fragmentation (see section B.3.1); invasive species (see section B.3.1); watersheds and drinking water (see section B.2); and alternatives (see section C).

ADP and OVEC, in its Project-specific comments, did identify two other projects under FERC's jurisdiction that are being proposed by Equitrans in the region and recommends that they be analyzed in the same EIS. These projects include Equitrans' MVP (CP16-10-000) and its Expansion Project (CP16-13-000). We find no interrelationship or connectedness between these projects and the TP-371 Project beyond the fact that they share a general regional proximity to the Marcellus and Utica Shale regions. The ongoing development of the Marcellus and Utica shale continues to drive demand for takeaway interstate pipeline transmission facilities. We do not find that the TP-371 Project is functionally or financially dependent upon these other projects; nor are the proposals shown or claimed to be dependent upon the timing of another project's approval or in-service date. Based on this independent utility, we conclude these other projects are not connected actions requiring a combined NEPA review. However, we have included these projects in our cumulative impacts analysis in section B.11 of this EA, where we have identified that the geography and timing of these other projects may result in cumulative impacts within the region of influence for the TP-371 Project.

ADP and OVEC also commented that FERC should determine if any additional upgrades to the existing TP-371 or TP-301 pipeline systems would occur. In its application for the proposed TP-371 Project, Equitrans states that it has no current plans for future expansion of facilities associated with the proposed Project and FERC has no knowledge of additional projects that may be proposed by Equitrans on these pipelines in the foreseeable future.

Consol Energy Inc. (Consol) provided concerns regarding its existing assets that would be crossed by the proposed TP-371 Project; foreign utilities crossed by the proposed Project are discussed in section A.6.2. Consol also has concerns regarding an abandoned mine close to the proposed Project and the acidic waters that are present in the mine. Consol's abandoned mine is discussed in section B.1.1. Consol further requested that the full existing pipeline segment be cleaned and capped with weld caps prior to abandonment. Abandonment activities are discussed

in section A.6.6. Finally, Consol requests that the Commission require Equitrans to take appropriate remedial actions if any coal refuse were encountered along the proposed route; coal mining activities are discussed in section B.1.1.

2. Purpose and Need

Equitrans states that the purpose of the proposed Project is to upgrade and modernize the existing system to allow for in-line inspection (pigging) of the full TP-371 pipeline (including the Replacement Segment), and to improve the safety, operational efficiency, and reliability of the system. Section 7(b) of the NGA specifies that no natural gas company shall abandon any portion of its facilities subject to the Commission's jurisdiction without the Commission first finding that the abandonment will not negatively affect the present or future public convenience and necessity. Under Section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them. The Commission bases its decision on technical competence, financing, rates, market demand, gas supply, environmental impact, long-term feasibility, and other issues concerning a proposed project.

2. Proposed Facilities

The proposed TP-371 Project, summarized below and in table A-1, consists of the following:

- replacement and construction of 20.8 miles of 20-inch-diameter natural gas pipeline extending from Equitrans' existing pipeline system in Armstrong County, Pennsylvania to the existing Egry Compressor Station in Indiana County, Pennsylvania (the Replacement Segment);
- abandonment of approximately 20.8 miles of existing 12-inch-diameter natural gas pipeline, and removal of appurtenant facilities and two short sections of exposed pipe, generally collocated with the Replacement Segment (the Existing Segment);
- installation of a pig[2] launcher/receiver facility and five mainline valve (MLV) sites;
- transfer of seven tie-in or tap locations from the Existing Segment to the Replacement Segment;
- installation of two customer meters and abandonment of three additional meters;
- construction of one new groundbed for cathodic protection[3], and modification of a second;
- temporary and permanent access roads, and temporary laydown yards.

[2] A "pig" is a device to clean or inspect the pipeline. A pig launcher/receiver is an aboveground facility where pigs are inserted or retrieved from the pipeline.

[3] Cathodic protection is a technique to reduce corrosion (rust) of the natural gas pipeline through the use of an induced current or a sacrificial anode (like zinc or manganese) that corrodes at a faster rate to reduce corrosion.

Table A-1
TP-371 Project Facilities

Facility Name/ Location	Milepost	Dimensions/ Description	Disturbance During Construction (acres)	Disturbance During Operation (acres)	County, State
New/Replacement Facilities					
Replacement Segment[a]	0.0-20.8	20.8 miles of new 20-inch-diameter pipeline	314.9	116.4	Armstrong and Indiana, PA
Pig Launcher/ Receiver[b]	0.0	Replacement of existing pig launcher/receiver	<0.1	<0.1	Armstrong, PA
Valley Station MLV[b]	0.0	New 20-inch MLV and tie-in to existing 20-inch pipeline	<0.1	<0.1	Armstrong, PA
Groundbed 1 (Walnut Road)	1.7	New groundbed	0.6	0.6	Armstrong, PA
Annie Irwin #2 and #3[b]	4.3	Replacement MLV and tap	<0.1	<0.1	Armstrong, PA
Graham Meter[b]	8.6	New meter	<0.1	<0.1	Armstrong, PA
Riggle Meter[b]	10.3	Replacement meter	<0.1	<0.1	Armstrong, PA
Girty Station Dehydration and Discharge[b]	10.6	Replacement MLV and tap	<0.1	<0.1	Armstrong, PA
Shady Plain Discharge[b]	11.6	Replacement MLV	<0.1	<0.1	Armstrong, PA
Groundbed 2 (Beagle Club Road)	14.2	Modified groundbed	0.6	0.6	Armstrong, PA
Williams Beagle Tap[b]	14.4	Replacement tap	<0.1	<0.1	Armstrong, PA
Blackleggs Road MLV[b]	18.1	New 20-inch MLV	<0.1	<0.1	Indiana, PA
Egry Interconnect[b]	20.8	New MLV, interconnect to existing 20-inch pipeline, and discharge	<0.1	<0.1	Indiana, PA
Abandonment Facilities[c]					
Existing Segment	0.0-20.8	20.8 miles of 12-inch-diameter pipeline to be abandoned in place	N/A	N/A	Armstrong and Indiana, PA
Drip	0.0	Removal of pipeline drip	N/A	N/A	Armstrong, PA
Pig Launcher[d]	0.0	Removal of launcher	N/A	N/A	Armstrong, PA

Table A-1 (continued)
TP-371 Project Facilities

Facility Name/ Location	Milepost	Dimensions/ Description	Disturbance During Construction (acres)	Disturbance During Operation (acres)	County, State
Abandonment Facilities (continued)					
Exposed Pipe	0.2	Removal of 29 feet of exposed pipe[e]	N/A	N/A	Armstrong, PA
MLV	4.7	Removal of MLV	N/A	N/A	Armstrong, PA
Aboveground Piping	6.9	Cut/cap of miscellaneous piping	N/A	N/A	Armstrong, PA
Meter	10.3	Removal of meter	N/A	N/A	Armstrong, PA
MLV	10.6	Removal of MLV	N/A	N/A	Armstrong, PA
MLV	11.6	Removal of MLV	N/A	N/A	Armstrong, PA
Meter	11.8	Removal of meter	N/A	N/A	Armstrong, PA
Aboveground Piping	12.2	Cut/cap of miscellaneous piping	N/A	N/A	Armstrong, PA
Meter	13.8	Removal of meter	N/A	N/A	Armstrong, PA
MLV	14.4	Removal of MLV	N/A	N/A	Armstrong, PA
Drip	15.8	Removal of pipeline drip	N/A	N/A	Indiana, PA
Exposed Pipe	17.3	Removal of 10 feet of exposed pipe	N/A	N/A	Indiana, PA
Pig Signal	17.3	Removal of pig signal	N/A	N/A	Indiana, PA
Residual Waste Tank and MLV	18.4	Removal of waste tank and MLV[e]	N/A	N/A	Indiana, PA
MLV	18.7	Removal of MLV[e]	N/A	N/A	Indiana, PA
Pig Launcher/ Receiver[f]	20.8	Removal of two launcher/ receivers	N/A	N/A	Indiana, PA

[a] Pipeline disturbance acreage includes the right-of-way, additional temporary workspace, access roads, and laydown yards. One laydown yard, a currently commercial/industrial property, is also proposed in Westmoreland County, Pennsylvania.

[b] Work associated with the installation of this facility would occur wholly within the construction right-of-way for the Replacement Segment.

[c] Work associated with the abandonment or removal of this facility would occur wholly within the construction right-of-way for the Replacement Segment. Removal of abandonment facilities would occur after the Replacement Segment became operational.

[d] The facility is located within the boundary of the existing Valley Compressor Station.

[e] The exposed pipe is located within the path of a planned HDD.

[f] The facility is located within the boundary of the existing Valley Compressor Station.

Equitrans plans to start construction in March 2016, pending the Commission's approval and receipt of all other necessary permits and approvals, and plans to place the facilities into service by November 2016. The general location of the proposed Project is shown in figure 1, and U.S. Geological Survey (USGS) quadrangle maps are included in appendix A. Table A-2 provides acreage requirements for each of the proposed Project facilities.

Table A-2
Summary of Land Requirements for the TP-371 Project[a, b]

Facility	Land Affected During Construction (acres)	Land Affected During Operation (acres)
Pipeline Right-of-way[c, d]	258.2	115.1
Access Roads	29.6	1.3
Laydown Yards	27.1	0.0
Groundbeds	1.1	1.1
Project Total	**316.0**	**117.5**

[a] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends.

[b] Removal of existing facilities along the Existing Segment would occur after the Replacement Segment becomes operational; workspaces for these activities would be within the construction right-of-way for the Replacement Segment, or within the fencelines of existing facilities.

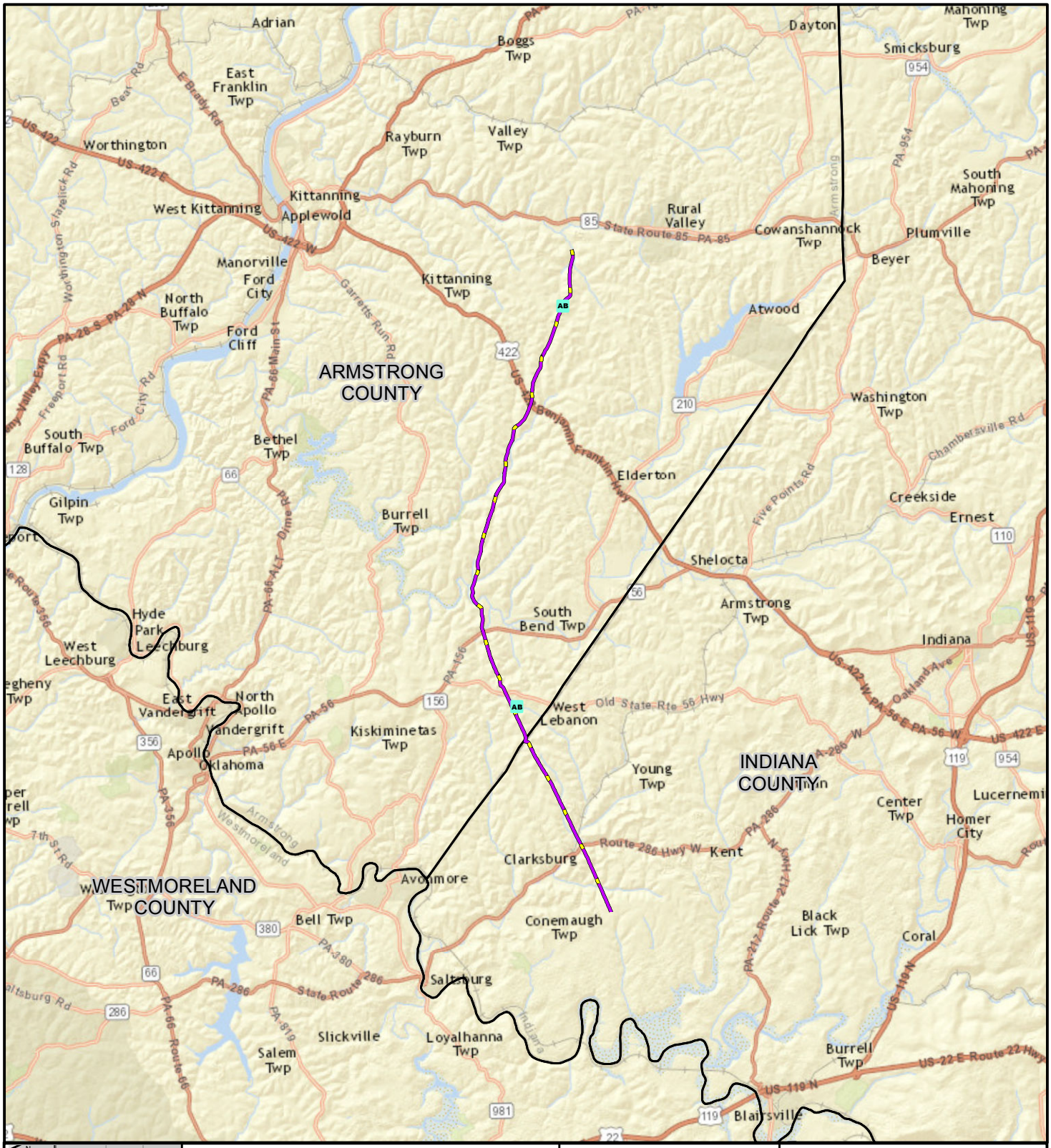
[c] Right-of-way includes acreages for additional temporary workspace.

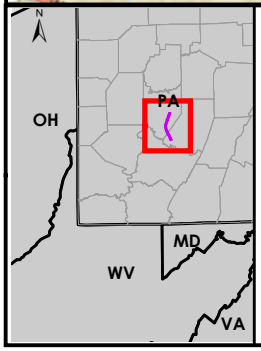
[d] Work associated with the installation of MLVs, pig launcher/receivers, and interconnects would occur wholly within the operational right-of-way for the Replacement Segment.

4.1 Pipeline Facilities

The Project would involve construction of the Replacement Segment and appurtenant facilities, followed by the decommissioning and abandonment of the Existing Segment and appurtenant facilities. In addition to the pipeline segments, Equitrans would install a cathodic protection system that would rely on large groundbeds consisting of below-grade anodes and limited aboveground components including a cathodic protection rectifier on an aboveground pole to protect long segments of pipe (see section A.4.2).

The TP-371 Replacement Segment would be 20.8 miles long, beginning at a tie-in to Equitrans' existing TP-7625 and TP-301 systems in Armstrong County, Pennsylvania and ending at the Egry Compressor Station in Indiana County, Pennsylvania. The Replacement Segment would include pigging facilities, as well as six MLVs. In addition, a total of seven tie-ins and taps would be transferred to the Replacement Segment from the Existing Segment, two customer meters would be installed and three customer meters would be abandoned.





Legend

- AB — Groundbed
- Replacement Segment
- County Boundary

Note: The Existing Segment is generally collocated with the Replacement Segment.

0 2.5 5
Miles

N

Scale: 1:250,000

Basemap Source: Esri, DeLeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China, Esri Thailand, Tom Tom, 2013

TP-371 Pipeline Replacement Project

Project Overview

FIGURE 1

The proposed construction right-of-way would be 100-feet-wide; this would be reduced to 75 feet during construction through wetlands. The proposed permanent right-of-way for the Replacement Segment would be 50-feet-wide. To minimize the need for new clearing, Equitrans has proposed to collocate about 95 percent (by distance) of the Replacement Segment with the Existing Segment (see table A-3).

The current maintained right-of-way for the Existing Segment is 60 feet. Where collocated, the two pipelines would be offset between 10 to 15 feet, allowing use of up to 58 feet of the existing right-of-way during construction. The new permanent right-of-way in these collocated areas would use 40 feet of the existing right-of-way, resulting in a minimal increase in the amount of newly cleared permanent right-of-way (10 feet). The remaining 20 feet of existing right-of-way would be allowed to revegetate to natural conditions. The typical right-of-way configuration is depicted in figure 2; figure 3 depicts the general shift the maintained right-of-way.

As of its December 11, 2015 filing, Equitrans has acquired 69 percent of the land by tract and 59 percent by acreage. Although Equitrans has attempted to obtain a 75-foot-wide permanent easement from landowners, the grant of the additional 25 feet of easement is at the discretion of the landowners. Equitrans has not requested, nor would the FERC allow, vegetative maintenance along any additional width granted by the landowners and therefore permanent impacts would be restricted to the 50-foot maintained permanent easement discussed above.

Equitrans would require additional temporary workspace (ATWS) outside of the construction right-of-way for certain construction activities, including:

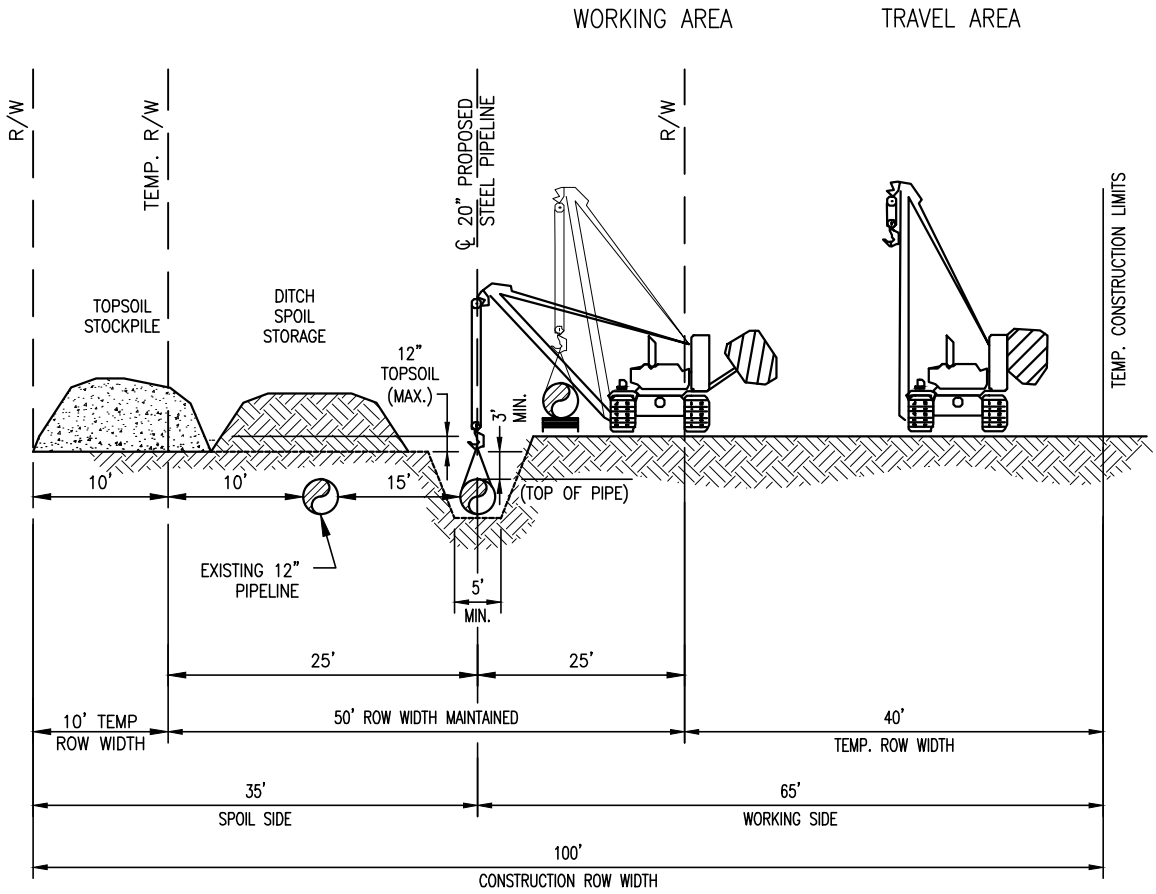
- waterbody and wetland crossings;
- road crossings;
- storage of stripped topsoil;
- power line and pipeline crossover areas;
- areas with steep side slopes;
- areas that require extra trench depth (for example, road, stream, or utility crossings, steep terrain, or drainage tiles);
- areas with shallow bedrock along the trench;
- storage of construction materials;
- parking and equipment turnaround areas; and
- other site-specific constraints.

Table A-3
Right-of-Way Collocation for the TP-371 Project

Start Milepost	End Milepost	Distance (feet)	Existing Segment Right-of-way (ROW) width (feet)	Collocation of Replacement Segment Construction ROW width (feet)	Width of Collocation of Replacement Segment Permanent ROW (feet)	Reason for Deviation
0.0	4.3	22,546	60	50	40	--
4.3	4.3	158	60	--	--	The Replacement Segment would be offset approximately 60 feet from the Existing Segment to avoid a structure.
4.3	6.0	8,765	60	52	40	--
6.0	6.30	1,795	60	--	--	The HDD path for the Replacement Segment would be offset between 80 and 110 feet from the Existing Segment. The route was designed to avoid impacts on a swimming pool which has been constructed within the Existing Segment right of way.
6.3	10.4	21,806	60	50	40	--
10.4	10.7	1,320	60	--	--	The Replacement Segment would be offset a maximum of 500 feet from the Existing Segment to route around an existing compressor station.
10.7	11.3	3,115	60	50	40	--
11.3	11.3	370	60	--	--	The Replacement Segment would be offset approximately 45 feet from the Existing Segment to avoid impacts on a water well.
11.3	11.8	2,270	60	50	40	--
11.8	11.9	422	60	--	--	The Replacement Segment would be offset approximately 40 feet from the Existing Segment to avoid impacts on a wetland feature.
11.9	14.4	13,411	60	58	40	--
14.4	14.4	53	60	--	--	The Replacement Segment would be offset a maximum of 40 feet from the Existing Segment to allow for safe construction.

Table A-3 (continued)
Right-of-Way Collocation for the TP-371 Project

Start Milepost	End Milepost	Distance (feet)	Existing Segment Right-of-way (ROW) (feet)	Collocation of Replacement Segment Construction ROW (feet)	Collocation of Replacement Segment Permanent ROW (feet)	Reason for Deviation
14.4	15.1	3,907	60	55	40	--
15.1	15.3	1,056	60	--	--	The Replacement Segment would be offset a maximum of 370 feet from the Existing Segment to avoid impacts on a pond.
15.3	20.8	28,723	60	52	40	--



THESE DRAWINGS ARE CONCEPTUAL AND ARE SUBJECT TO CHANGE BASED UPON FIELD CONDITIONS AND PERMIT REQUIREMENTS

DRAWN	SVS	DATE	6/23/2015
CHECKED	RAW	DATE	6/23/2015
APP'D		DATE	
SCALE	N.T.S.	SHEET	1 OF 1
JOB NO.			
PROJECT ID:	P6541		

EQT SM
DESIGN ENGINEERING

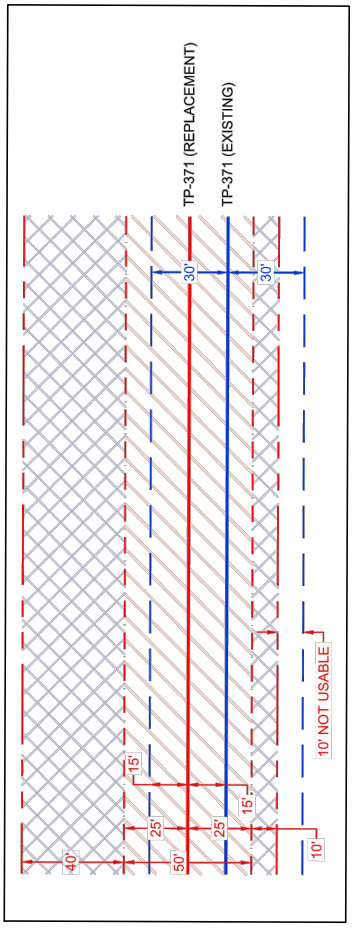
ENVIRONMENTAL DETAIL

TP-371 Pipeline Replacement Project
Typical Construction Right of-Way
FIGURE 2

DRAWING NO.	REV.
METHOD 1	2

LEGEND

- TP-371 (REPLACEMENT)
- TP-371 (EXISTING)
- TP-371 (EXISTING PERM. EASEMENT)
- TP-371 (PERM. EASEMENT)
- TP-371 (100' EASEMENT)
- 50' MAINTAINED PERM
- 50' TEMP (WORKING SIDE)



THESE DRAWINGS ARE CONCEPTUAL AND ARE SUBJECT TO CHANGE BASED UPON FIELD CONDITIONS AND PERMIT REQUIREMENTS

DRAWN SVS	DATE 12/17/2015
CHECKED RAW	DATE 12/17/2015
APP'D	DATE
SCALE N.T.S.	SHEET 1 OF 1
JOB NO.	
PROJECT ID: P6541	

EQT SM
DESIGN ENGINEERING

ENVIRONMENTAL DETAIL

TP-371 Pipeline Replacement Project
Maintained Right-of-Way
FIGURE 3

DRAWING NO.	REV.
METHOD 25	2

The use of ATWS during construction would affect 34.9 acres (see appendix B). Equitrans would generally locate ATWS a minimum of 50 feet from waterbody and wetland edges, as required by FERC's *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures), except where a reduced set-back is necessary for site-specific reasons (see section B.2 and appendix C). Although Equitrans has identified all areas where ATWS would be currently required, additional or alternative areas could be identified in the future because of changes in construction requirements at specific sites, and Equitrans would be required to file information on each of those areas for Commission review and approval prior to use. All ATWS areas would be restored to pre-construction conditions, to the extent practicable, and revert to previous uses following construction.

4.2 Aboveground Facilities

Equitrans is not proposing to construct significant aboveground facilities as part of the TP-371 Project; however, minor appurtenant facilities would be installed or removed, as listed in table A-1. These facilities include a pig launcher/receiver, six mainline valves, seven tie-ins, and two meters. All facilities would be located within the permanent right-of-way for the Replacement Segment, or within the boundaries of existing facilities.

Equitrans proposes use of two groundbeds for the Project, including the Walnut Road groundbed at MP 1.7 and the Beagle Club Road groundbed at MP 14.2. Equitrans would construct the 0.6-acre Walnut Road groundbed for the proposed Project by installing twenty anodes at a depth of 10 to 15 feet, as well as a cathodic protection rectifier on an aboveground, existing power pole. The Beagle Club Road groundbed is existing; however, Equitrans would replace the existing anodes during construction. Both groundbeds would be maintained with herbaceous habitat during operation of the Project.

4.3 Laydown Yards

Equitrans has identified nine laydown yards that would be used for the storage of pipe and contractor materials; these areas are located off the proposed right-of-way (see table A-4). Additional work areas, would also be used along the proposed right-of-way and are identified in appendix B.

4.4 Access Roads

Equitrans has identified 47 access roads proposed for use, including 41 that would be used only during construction and 6 that would be permanent for use during operations (see appendix D). Thirteen roads are proposed new access roads and 34 are existing roads. Existing roads proposed for temporary use may require modifications, potentially including widening, straightening, grading, and graveling; after construction, these roads would be left in their improved state. New temporary roads would be returned to pre-construction conditions, unless otherwise agreed upon by the landowner. The six permanent roads, three of which are existing roads, would be maintained for the life of the Project to access the right-of-way and aboveground facilities (see appendix D).

Table A-4
Laydown Yards for the TP-371 Project

Township/ Borough	Location[a] (nearest milepost)	Size (acres)	Current Land Use
Armstrong County			
Cowanshannock Township	7.3 miles E of milepost MP 0.2	3.3	Open land
Cowanshannock Township	0.1 mile E of MP 0.1	0.3	Industrial/commercial
South Bend Township	1.5 miles E of MP 12.2	5.2	Industrial/commercial and open land
Kittanning Township	3.9 miles W of MP 2.1	3.0	Open land
Kiskiminetas Township	6.4 miles SW of MP 12.7	2.1	Industrial/commercial and open land
Indiana County			
Armstrong Township	6.6 miles SE of MP 7.2	3.2	Open land
Armstrong Township	4.8 miles E of MP 11.2	1.4	Open land
Blairsville Borough	7.1 miles SE of MP 20.8	3.6	Industrial/commercial
Westmoreland County			
Derry Township	6.6 miles SE of MP 20.8	5.0	Industrial/commercial

[a] Location: SW = southwest; SE = southeast; E = east; and W = west.

7. Construction Schedule and Workforce

Equitrans anticipates that construction of the pipeline would commence in March 2016, subject to receipt of necessary permits and regulatory approvals. Equitrans is proposing to divide Project construction into no more than three concurrently operating "spreads" (spreads are construction areas with separate crews):

- spread 1: conventional pipeline construction from MP 0.0 to MP 10.6;
- spread 2: conventional pipeline construction from MP 10.6 to MP 20.8; and
- spread 3: HDD construction at six locations along the pipeline route.

Additional detail on HDD construction, including the beginning and ending milepost for each HDD, is provided in section A.6.2. Construction would require an estimated peak temporary work force of about 150 people; no new operational staff would be required. Equitrans' projected in-service date is November 2016. Equitrans would begin abandonment of the Existing Segment after the Replacement Segment and appurtenant facilities were placed in service so that deliveries of natural gas are not disrupted.

7. Construction, Operations, and Maintenance Procedures

The Project would be designed, constructed, operated, and maintained in accordance with applicable requirements defined by U.S. Department of Transportation (DOT) regulations in Title 49 CFR Part 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*; the Commission's Siting and Maintenance Requirements with 18 CFR 380.15; and other applicable federal and state safety regulations.

Generally, the pipeline would be installed using conventional overland construction techniques, where each of the construction spreads (crews) proceeds along the pipeline right-of-way in one continuous operation, with the entire process coordinated to minimize the total amount of time a tract of land is disturbed. Equitrans would implement FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan)[4] and Procedures[5]. The FERC's Plan and Procedures are a set of construction and mitigation measures to minimize the potential environmental impacts of the construction of pipeline projects in general. Equitrans has requested certain deviations from FERC's Procedures, including deviations from ATWS setback requirements from wetlands and waterbodies (see appendix C); we have reviewed these deviations and find them acceptable.

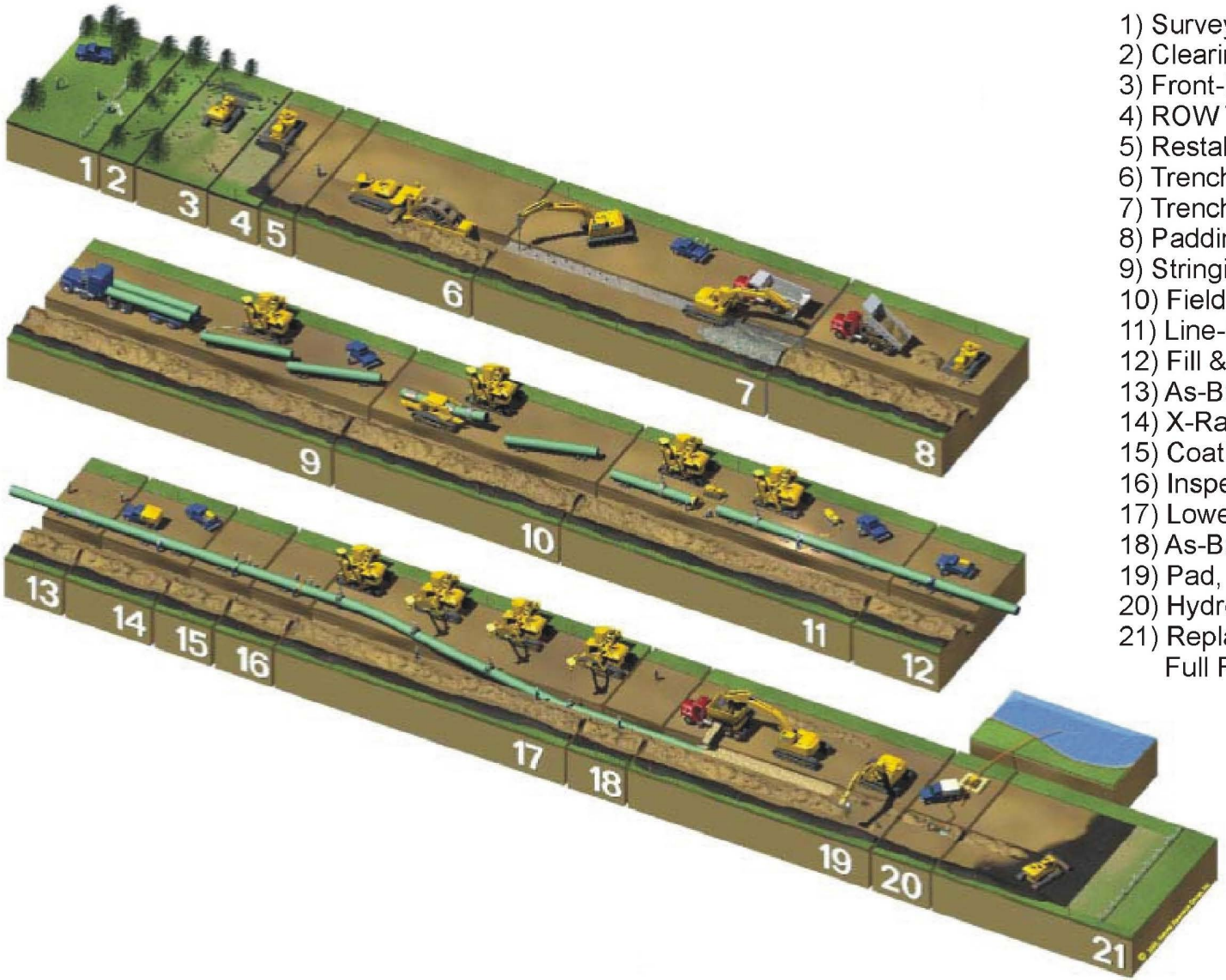
Equitrans would also implement additional construction, restoration, and mitigation plans for the proposed Project, including its Spill Prevention, Control, and Countermeasures (SPCC) Plan; Horizontal Directional Drill (HDD) Contingency Plan; and Unanticipated Discoveries Plan. These plans are available for review on our website (eLibrary under Docket No. CP15-528-000). We have reviewed these construction and mitigation plans and have found them acceptable. In addition, Equitrans would implement a set of erosion and sediment control plans, to be approved by the Armstrong County Conservation District, which administers the Nonpoint Discharge Elimination System Permit Program in conjunction with the Pennsylvania Department of Environmental Protection (PADEP), prior to construction, which would incorporate the FERC Plan and Procedures, along with other mitigation measures. Although the Armstrong County Conservation District is the delegated authority for approval of the Erosion and Sediment Control General Permit, it would coordinate with the Indiana County Conservation District during its review of the erosion and sediment control plans.

6.1 General Pipeline Construction Procedures

General pipeline construction activities are depicted in figure 4. Prior to construction, Equitrans would stake the pipeline centerline and the limits of the construction right-of-way, ATWS areas, highway and railroad crossings, access roads, and environmentally sensitive areas. Equitrans would also coordinate with landowners to identify irrigation or drainage systems, and with the State One-Call system to have existing underground utilities identified and flagged to minimize the potential for accidental damage during pipeline construction.

[4] A copy of the FERC Plan is available at www.ferc.gov/industries/gas/enviro/plan.pdf.

[5] A copy of the FERC Procedures is available at www.ferc.gov/industries/gas/enviro/procedures.pdf.



1) Survey and Staking
2) Clearing
3) Front-End Grading
4) ROW Topsoil Stripping
5) Restaking Centerline of Trench
6) Trenching (Wheel Ditcher)
7) Trenching (Rock)
8) Padding Trench Bottom
9) Stringing Pipe
10) Field Bending Pipe
11) Line-UP, Initial Weld
12) Fill & Cap, Final Weld
13) As-Built Footage
14) X-Ray Inspection, Weld Repair
15) Coating Field Welds
16) Inspection & Repair of Coating
17) Lowering Pipe in to Trench
18) As-Built Survey
19) Pad, Backfill, Rough Grade
20) Hydrostatic Testing, Final Tie-In
21) Replace Topsoil, Final Clean-Up, Full Restoration

TP-371 Pipeline Replacement Project

Typical Pipeline Construction Sequence

FIGURE 4

After marking the construction areas, clearing crews would clear workspaces of vegetation and obstructions, such as stumps, logs, and large rocks. Cleared non-wetland vegetation and stumps would be burned, chipped, stacked, or otherwise handled per individual landowner agreements and applicable regulations and ordinances. When feasible, Equitrans would cut vegetation to ground level, leaving the root systems intact. Temporary soil erosion and sedimentation control devices would be installed as needed in accordance with the FERC Plan and Procedures. These erosion and sediment controls would be inspected and maintained throughout construction and restoration of the Project. Following clearing, the construction right-of-way and ATWS areas would be graded where necessary to provide a level work surface.

Trenching would be conducted with a backhoe or ditching machine. Large stones or bedrock would be broken using conventional rock-trenching methods; blasting is not currently proposed. Excavated soils would be stockpiled along the right-of-way, typically on the side of the trench away from the construction traffic and pipe assembly area (the "spoil side"). In agricultural, residential, and wetland areas, subsoil would be stored adjacent to the trench within the construction right-of-way limits and maintained separately from topsoil piles. Typically, the trench would be excavated at least 12 inches wider than the diameter of the pipe. The trench would be excavated to a sufficient depth to allow a minimum of 3 feet of soil cover between the top of the pipe and the final graded land surface after construction. Pipeline cover may be greater than 3 feet at road, stream, wetland, railroad crossings; in cultivated agricultural land, Equitrans would bury the pipeline at a depth of 4 feet. In compliance with 49 CFR Part 192, the depth of cover would be a minimum of 2 feet in areas of consolidated rock. Topsoil would be segregated in accordance with the FERC Plan and Procedures.

Individual sections of pipe would be trucked to the construction right-of-way and strung along the trenchline in a single, continuous line. Typically, a track-mounted, hydraulic pipe-bending machine would tailor the shape of the pipe to conform to the contours of the terrain. The pipe segments would then be placed on temporary supports and welded together into long 'strings'. Welding would be conducted in compliance with 49 CFR Part 192 *(Transportation of Natural and Other Gas by Pipeline Minimum Federal Safety Standards)*, American Petroleum Institute Standard 1104 (*Welding of Pipelines and Related Facilities)*, and Equitrans' specifications. Completed welds would be inspected to ensure compliance with 49 CFR Part 192, and all pipe welds would be coated to prevent corrosion. The coating would be inspected for defects, and repaired, if necessary, prior to lowering the pipe into the trench. Prior to lowering in the pipe, the trench would be inspected to ensure it is free of rocks and other debris that could damage the pipe or its protective coating. The pipe would then be lifted from the temporary supports and lowered into the trench using sideboom tractors. In rocky areas, a layer of soil or sand would be placed on the bottom of the trench to protect the pipe.

Once the pipe has been lowered in, the trench would be backfilled with previously excavated materials. If excavated materials are not suitable (in other words, they are too rocky), the pipeline would be covered with more suitable fill or protected with a rock shield. Topsoil would not be used to pad the pipe. Previously graded areas would be returned to original contours, although a slight crowning at the top of the trench may be left to allow for settling of soil air pockets. Excess soil may be spread evenly within uplands in the right-of-way, and in accordance with landowner and agency requirements.

After backfilling, pipeline segments would be hydrostatically tested in sections to ensure the system is free from leaks and meets safety requirements at operating pressures. Municipal water would be obtained for testing. No chemicals would be added to the test water prior to use unless chlorinated water is used, in which case a dechlorinating agent may be applied prior to discharge. The water in the pipe segments would be pressurized and held for a minimum of 8 hours and the test would be conducted in accordance with 49 CFR Part 192 and applicable permit conditions. Any leaks detected would be repaired and the pipe segment retested. Upon completion of hydrostatic testing, the water would be discharged in accordance with the FERC Procedures, as well as federal and state requirements. Refer to section B.2.2 of this report for additional information on hydrostatic testing.

Final cleanup would begin after backfilling and as soon as weather and site conditions permit. Efforts would be made to complete final cleanup (including removal of construction debris, replacement of topsoil where applicable, final grading, and installation of permanent erosion control devices) within 20 days after the trench is backfilled. In residential areas, cleanup and restoration would take place within 10 days of backfilling.

Equitrans would implement restoration guidelines in accordance with the FERC's Plan and Procedures and applicable permit requirements. Areas disturbed by construction would be graded to match original contours and surrounding drainage patterns, except at those locations where permanent changes in drainage would be required to prevent erosion, scour, and possible exposure of the pipeline. Temporary and permanent erosion and sediment control measures, including silt fencing, water bars, and vegetation would be installed. Fences, gates, driveways, and roads disturbed by pipeline construction would be restored to pre-construction conditions or better, as practicable. Markers showing the location of the pipeline would be installed at fence and road crossings to identify Equitrans as the owner and convey emergency information in accordance with applicable government regulations, including DOT safety requirements.

In most upland locations, excluding actively cultivated cropland, areas disturbed by construction would be revegetated with a grass seed mixture and mulch would be applied as appropriate to avoid erosion. Equitrans developed appropriate seed mixes in consultation with the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), and Armstrong and Indiana County Conservation Districts that would be used during Project restoration.

6.2 Special Pipeline Construction Procedures

Waterbody Crossings

Equitrans proposes to cross streams using open cut, dam-and-pump, flume, and HDD crossing methods. Equitrans would adhere to the measures specified in the FERC Procedures, with approved alternative measures, as well as any additional requirements that may be specified in federal or state waterbody crossing permits.

Open-Cut Method

An open-cut crossing method is proposed at waterbodies that are dry or have no perceptible flow at the time of crossing. This method is typically conducted with backhoe-type

excavators operating from the banks of the waterbody. Spoil excavated from the trench would be placed at least 10 feet upland from the bank (where possible) for use as backfill. A prefabricated segment of pipeline would then be placed into the trench using sideboom tractors. Concrete coating or set-on weights would be utilized, as necessary, to provide negative buoyancy for the pipeline. Once the trench is backfilled, the banks would be restored as near as practicable to pre-construction contours and stabilized.

Stabilization measures would include seeding, installation of erosion control blankets, or installation of riprap materials, as appropriate. If conditions changed during construction such that perceptible flow was present, or likely to become present, Equitrans would implement either the dam-and-pump or the flume method, as described below.

Dam-and-Pump Crossing Method

A dam-and-pump crossing diverts or isolates flow during pipe installation. The dam-and-pump method involves installing temporary dams upstream and downstream of the proposed waterbody crossing, typically using sandbags. Following dam installation, pumps with hoses would be used to transport the streamflow around the construction work area and trench. Additional pumps would be used to dewater the area between the dams. Intake screens with 0.25-inch mesh would be installed at the pump inlets to prevent or limit entrainment of aquatic life, and energy-dissipating devices would be installed at the pump discharge point to minimize erosion and streambed scour. Trench excavation and pipe installation would then commence through the dewatered and relatively dry portion of the waterbody channel. After pipe installation, backfilling of the trench, and restoration of the stream banks, the temporary dams would be removed and flow through the construction work area would be restored.

Flume Crossing Method

The flume method is similar to the dam-and-pump method of crossing but uses flumes instead of pumps to maintain water flow and fish passage during pipeline construction. During a typical flume crossing, water would be diverted across the trenching area through one or more flume pipes of suitable diameter to convey the maximum water flow. Temporary sandbag and plastic sheeting dams would be used to support and seal the ends of the flume and to direct stream flow into the flume and over the construction area. These temporary dams at both the upstream and downstream sections of the flume would create a containment area where turbid water would be confined. The water would then be pumped out through an upland dewatering structure to create a dry work area for trench excavation and pipe installation. Immediately after backfilling, bottom recontouring, and restoration of stream banks, the flume and temporary dams would be removed and flow through the construction work area would be restored.

HDD Crossing Method

Equitrans proposes to use the HDD method of construction at six locations along the proposed pipeline route (see table A-5). The HDD method involves drilling a pilot hole under the waterbody, or targeted feature, then enlarging that hole through successive reaming until the hole is large enough to accommodate the pipe. Throughout the process of drilling and enlarging the hole, a slurry (drilling mud) made of naturally occurring non-toxic materials such as

bentonite clay and water would be circulated through the drilling tools to lubricate the drill bit, remove drill cuttings, and hold the hole open. Pipe sections long enough to span the entire crossing would be staged and welded along the construction work area and then pulled through the drilled hole. This crossing method requires ATWS for the HDD entry and exit points, but generally avoids impacts on the feature being crossed, with the exception of hand-clearing minimal vegetation within a 2- to 3-foot-wide path to lay the HDD guide wire, and the potential return of drilling mud to the surface, known as an inadvertent return.

Table A-5
Summary of Horizontal Directional Drill Locations for the TP-371 Project

HDD Number	Begin Milepost	End Milepost	Length (feet)	Primary Features Avoided
HDD-1	0.1	0.5	1,670	State Road (SR) 2003, Wetland Complex, Huskins Run
HDD-2	5.9	6.3	1,430	Pyra Road/SR 2020, Veahmans Road, Private Pool
HDD-3	10.8	11.1	1,580	Townsend Road/SR 2035, Crooked Creek
HDD-4	18.1	18.6	2,020	Park Drive/SR 3025, Norfolk Southern Railroad, Wetland, Nesbit Run, Blacklegs Creek
HDD-5	18.6	18.9	1,240	SR 286
HDD-6	2.5	3.2	3,695	Unidentified Tributaries to Cherry Run

Conventional Bore Crossing Method

Equitrans proposes to cross two waterbodies by conventional bore. Bored crossings consist of excavating a pit on each side of the feature to be crossed; placing boring equipment within the pits; boring a hole under the feature; and pulling a section of pipe through the hole. Equitrans has indicated that boring operations would typically occur over a 50- to 60-foot distance.

Wetland Crossings

Wetland boundaries would be delineated and marked in the field prior to construction activities. Woody vegetation within the construction right-of-way would be cut off at ground level and removed from the wetlands, generally leaving the root systems intact; the pulling of tree stumps and grading activities would be limited to the area directly over the trenchline unless it is determined that safety-related construction constraints require otherwise. Equitrans would install temporary sediment control devices as necessary after initial disturbance of wetlands or adjacent upland areas to prevent sediment flow into wetlands in accordance with the FERC Procedures. These devices would be maintained until revegetation of the wetlands is complete.

Construction equipment operating in wetland areas would be limited to that needed to clear the right-of-way, dig the trenches, install the pipeline, backfill the trenches, and restore the right-of-way. In addition, Equitrans would install trench plugs to maintain wetland hydrology and use timber mats in saturated wetlands where rutting could occur.

Equitrans would determine the method of pipeline construction within each wetland by soil stability and saturation at the time of construction. Where soils are stable and are not saturated at the time of crossing, the pipeline would be installed using methods similar to those in uplands. Other methods identified in our Procedures could be used where wetland soils are saturated and/or inundated, if applicable.

Equitrans has indicated that it would segregate up to 12 inches of topsoil from the area directly over the trenchline and over spoil storage areas, and stockpile it separately from the subsoil. Our Procedures require that topsoil be segregated only over the trenchline in wetlands; therefore, **we recommend that:**

- **Prior to construction, Equitrans should commit to segregating topsoil only over the trenchline in wetlands, except where standing water is present, and file revised typical construction drawings for wetland crossings with the Secretary for review and written approval by the Director of OEP.**

Following pipeline installation, Equitrans would backfill the trench with subsoil then topsoil, and install permanent erosion control measures in accordance with the FERC Procedures. Wetlands would typically be allowed to revegetate naturally; however, wetlands may be seeded with annual rye grass and other species recommended by the PADEP for temporary erosion control or if required by permit.

Some staging areas may be required adjacent to wetlands for the assembly and fabrication of the pipeline to perform a wetland crossing. These ATWSs would be located at least 50 feet from the edge of the wetland except in cases where this is not feasible (for example, near HDD entry and exit locations and road crossings). In these cases, Equitrans has requested alternative measures from the FERC's Procedures that would allow a setback less than 50 feet from wetlands (see appendix C). In addition, one wetland is located within an existing laydown yard proposed for use; Equitrans would install construction fencing around the wetland and would avoid impacts on the wetland. In areas where the wetland is adjacent to an upland that consists of actively cultivated or rotated cropland or other disturbed land, alternative measures would not be required. Appendix C identifies the location and rationale for changes in setback distances at wetland crossings. We have reviewed these ATWS and laydown yard locations, and Equitrans' justifications for them, and have found them acceptable.

Road and Railroad Crossings

Equitrans would cross local, state, and federal roads using open-cut methods, conventional bore, or HDD (see table A-6). All six gravel roads, as well as seven asphalt roads, would be crossed by open-cut methods and the pipeline buried at least three feet below the road surface. Each of these roads would be restored to pre-construction conditions or better.

Table A-6
Road and Railroad Crossings Associated with the TP-371 Project

Road or Railroad Name[a]	Milepost	Crossing Method	Surface Type
Armstrong County			
SR 2003	0.2	HDD	Asphalt
Walnut Road	1.7	Open cut	Gravel
St. Paul Road	2.3	Open cut	Asphalt
Margaret Road/SR 2005	3.7	Conventional bore	Asphalt
Benjamin Franklin Highway/U.S. Route 422	4.7	Conventional bore	Asphalt
Hillview Lane	5.0	Open cut	Gravel
Seldom Seen Road	5.6	Open cut	Gravel
Pyra Road/SR 2020	6.0	HDD	Asphalt
Veahmans Road	6.2	HDD	Asphalt
Cherry Run Road/SR 2005	7.0	Conventional bore	Asphalt
Mt. Union Church Road/SR 2024	7.2	Open cut	Asphalt
Ridge Road	8.6	Open cut	Asphalt
Mill Hill Road/SR 2026	10.4	Conventional bore	Asphalt
Townsend Road/SR 2035	11.0	HDD	Asphalt
SR 56	11.8	Conventional bore	Asphalt
Hemlock Road	13.5	Open cut	Gravel
W. Lebanon Road/SR 2056	13.8	Conventional bore	Asphalt
Beagle Club Road	14.3	Open cut	Asphalt
North Long Run Road	15.1	Open cut	Gravel
Rosensteel Road	15.3	Open cut	Gravel
Indiana County			
Elders Ridge Road/SR 3019	15.8	Conventional bore	Asphalt
Coleman Road/SR 3023	16.3	Conventional bore	Asphalt
Bendis Road	16.5	Open cut	Asphalt
Park Drive/SR 3025	18.3	HDD	Asphalt
Norfolk Southern Railroad	18.4	HDD	Railroad
SR 286	18.7	HDD	Asphalt
Dixon Road	20.0	Open cut	Asphalt
Hans Road	20.1	Open cut	Asphalt

[a] Minor roadways and drives would be construction by open cut methods.

To minimize impacts at open-cut road crossings, Equitrans would temporarily detour traffic using appropriate signage. Where no reasonable detour is available, Equitrans would keep at least one lane open until closure is essential for pipeline installation; road closures would be arranged in coordination with the appropriate transportation authority. Of the remaining road

crossings, eight would be crossed by conventional bore and six paved roads would be crossed by HDD. No direct impacts on these roads would occur during construction of the proposed Project. One railroad would be crossed by HDD. All minor roadways and drives would be crossed by open cut methods.

Foreign Utility Crossing

The proposed pipeline would cross 107 existing pipelines and utilities (see appendix E). Prior to construction, Equitrans would utilize the Pennsylvania One-Call system to locate known utilities; Equitrans would identify the precise location of each foreign line prior to excavation using probes or handheld devices. Equitrans would also scan the right-of-way with ground penetrating radar equipment to identify unknown foreign pipelines prior to grading. Equitrans would have a monitor present during excavation near foreign pipelines and would also give each operator adequate notice so that they could be present during construction around their utility lines. Excavations within three feet of foreign pipelines, or the Existing Segment, would be conducted by hand and the proposed TP-371 Project would typically be installed at least 1 foot under existing pipelines to maintain the required soil cover and safe separation between the pipelines during construction and operation. In the event that a foreign utility were damaged during construction, Equitrans would notify the owner of the facility and would stop work, if necessary due to safety concerns, in the vicinity of the damage until the facility could be repaired.

Agricultural Areas

Construction through agricultural areas would be conducted in a manner similar to conventional pipeline construction; however, Equitrans would segregate topsoil in accordance with the FERC Plan. The full depth of topsoil, up to 12 inches, would be segregated from subsoil in areas over the trenchline and over spoil storage areas. Equitrans would store topsoil and subsoil in separate windrows along the construction right-of-way to prevent soil mixing. An additional 25 feet of ATWS could be used for topsoil stockpiling when topsoil segregation across the full construction right-of-way is conducted, in accordance with the Plan. During backfill operations, subsoil would be used to initially backfill the trench, and then the topsoil would be reapplied to the top of the trench and the graded right-of-way. In cultivated agricultural land, Equitrans would bury the pipeline at a depth of 4 feet. Equitrans is not currently aware of any drainage and irrigation systems that would be crossed by the Project. If any are located during landowner discussions, site-specific measures would be implemented to minimize impacts on the systems. In the event of damage by Project-related activities, Equitrans would repair or replace these systems. Seeding would not be conducted in cultivated croplands unless requested by the landowner. Revegetation of agricultural lands would be considered successful when, upon visual survey, crop growth and vigor were similar to adjacent undisturbed portions of the same field. Per the FERC Plan, Equitrans would visually inspect agricultural areas during the first and second growing seasons to monitor revegetation success.

Residential Areas

Equitrans has identified all residences and associated structures within 50 feet of any construction workspace and would implement mitigation measures, in accordance with the

FERC Plan, to minimize impacts on these houses and the residents, including topsoil segregation. After construction, final grading would be would be conducted within 10 days of backfilling the trench and all turf, ornamental shrubs, and specialized landscaping would be restored in accordance with landowner request. See section B.5.2 for further information on residential areas.

Rugged Terrain

Although Equitrans has attempted to avoid siting the proposed pipeline on steep slopes, portions of the pipeline route would cross some areas of steep slopes and rough topography (see table A-7). These areas can be susceptible to landslides, or slips, following trench backfill (see section B.1.1). Construction within areas of steep or rugged terrain may require the use of cut-and-fill (or two-tone) construction to provide for safe working conditions. In these areas, grading activities would cut down the upslope side of the construction right-of-way; material from that cutting would be used to fill the downslope side of the construction right-of-way to create a safe and level surface for travel lanes and equipment operation. Equitrans would use ATWS downslope to accommodate the storage of the excavated material. After installation and backfill, Equitrans would place excavated materials back in the area of the cut, compact the soil to restore the right-of-way to the original contours, and stabilize the surface in accordance with the FERC Plan and Procedures and applicable permits. Potential impacts associated with steep slopes and rugged terrain, as well as associated mitigation measures, are further discussed in section B.1.1.

Blasting

Equitrans does not anticipate blasting to be required during construction of the Replacement Segment due to its proximity to the Existing Segment. Equitrans would avoid the need for any blasting by breaking large stones or bedrock in the trench using conventional rock-trenching methods. In the event that blasting becomes necessary, Equitrans would submit a Blasting Plan for FERC review and approval.

6.3 Aboveground Facility Construction Procedures

No compressor stations are proposed to be constructed as part of the proposed Project; however, ancillary facilities would be installed or replaced as necessary (see table A-1). Equitrans would install a pig launcher/receiver, six mainline valves, seven tie-ins, and two meters. All new facilities would be constructed within the permanent right-of-way for the Replacement Segment, or within the boundaries of existing facilities. In addition, Equitrans would install one new groundbed and modify one existing groundbed outside the pipeline right-of-way.

Installation of the proposed Walnut Road groundbed (MP 1.7) would involve excavation of holes approximately 12-inches in diameter and 10 to 15-feet deep, installation of anodes, and installation of a cathodic protection rectifier on an aboveground, existing power pole. Work at the existing Beagle Club Road groundbed (MP 14.2) would involve replacement of existing anodes. These areas would be maintained in an herbaceous state during operations.

Table A-7
Areas of Rugged Topography

Start Milepost	End Milepost	Distance (feet)
Armstrong County		
0.5	0.9	2,112
1.1	1.5	2,112
1.9	2.2	1,584
3.5	4.1	3,168
4.3	6.7	12,672
7.2	7.4	1,056
7.7	8.4	3,696
8.9	9.3	2,112
9.6	9.8	1,056
10.2	10.4	1,056
10.9	11.1	1,056
11.5	12.4	4,752
12.7	14.0	6,864
14.6	15.1	2,640
Indiana County		
15.2	15.8	3,168
16.5	16.7	1,056
17.2	18.2	5,280
18.7	19.6	4,752
20.0	20.2	1,056
20.4	20.6	1,056

6.1 Environmental Compliance Inspection and Monitoring

Prior to construction, Equitrans would conduct environmental training for the appropriate construction personnel. Construction contractors would receive environmental training applicable to their job duties and construction management and environmental inspectors (EIs) would receive all Project-specific information. The training program would focus on the FERC Plan and Procedures; Project-specific Certificate and other permit conditions; regulatory requirements, such as those pertaining to endangered species, cultural resources, or wetlands; and other Project-specific mitigation plans. Equitrans would employ at least one EI for each construction spread during construction and restoration; all EIs generally report to the applicant's Chief Inspector. EIs would have the authority to stop activities that violate the Project's environmental conditions and to order appropriate corrective action.

Equitrans would conduct post-construction monitoring to document restoration and revegetation of the right-of-way and other disturbed areas. Equitrans would monitor wetlands for a period of 3 years or until revegetation is successful in accordance with the FERC Procedures. Equitrans would monitor upland areas after the first and second growing seasons following restoration or until revegetation is successful in accordance with the FERC Plan. Equitrans would also submit quarterly monitoring reports to FERC to document the status of revegetation in disturbed areas. These reports would describe the results of post-construction inspections, any problem areas, and corrective actions taken. Monitoring would cease if an area meets performance standards at the end of the second year (or in any subsequent year). Equitrans would also file with FERC a wetland revegetation monitoring report 3 years after the completion of construction. Equitrans would continue to file wetland revegetation monitoring reports on an annual basis thereafter until revegetation efforts are considered successful.

In addition, FERC staff would inspect the Project throughout construction to independently verify compliance with the Commission's orders. FERC staff would continue to monitor and inspect the vegetation along the Project route until restoration and revegetation are deemed successful.

6.2 Operations and Maintenance

Equitrans would operate and maintain the new pipeline, aboveground facilities, and modified facilities in accordance with all applicable federal and state regulations, including 49 CFR Part 192. Equitrans would periodically inspect the pipeline from the air and/or on foot, in accordance with applicable regulatory requirements, to identify potential concerns that may affect the safety and operation of the pipeline. If pipeline patrols or vegetation maintenance identify areas on the right-of-way where erosion is occurring, Equitrans would repair existing erosion control devices or install additional devices as necessary to stabilize the area and prevent future erosion, throughout the life of the Project.

To maintain accessibility to the right-of-way and accommodate pipeline integrity surveys, vegetation along the permanent pipeline right-of-way would be cleared periodically, using mechanical mowing or cutting where necessary, and in accordance with the FERC Plan and Procedures. Routine vegetation maintenance in uplands would not be conducted more frequently than every 3 years, with the exception of a 10-foot-wide corridor centered on the pipeline that would be maintained in an herbaceous state to allow for periodic corrosion and leak surveys. In no case would routine vegetation maintenance clearing occur between March 31 and November 15 of any year, unless otherwise approved by the U.S. Fish and Wildlife Service (FWS), to minimize potential impacts on migratory birds during operation of the pipeline facilities.

Active cropland would be allowed to revert to pre-construction use for the full width of the right-of-way. In non-cultivated uplands, routine vegetation maintenance clearing would be done in accordance with the FERC Plan. In wetlands, a 10-foot-wide corridor centered over the pipeline could be maintained in an herbaceous state, and trees within 15 feet of the pipelines with roots that may compromise the pipeline integrity may be selectively cut and removed from the right-of-way.

Equitrans personnel also would perform regular operation and maintenance activities on equipment at pigging facility, interconnects, and MLVs. These activities would include calibration, inspection, and scheduled routine maintenance. Operational testing would be performed on safety equipment to ensure proper functioning, and problems would be corrected.

6.3 Abandonment Activities

Once the Replacement Segment is operational, the Existing Segment would be abandoned in place. The pipeline would be disconnected from gas supplies and purged before injecting a nitrogen blanket and capping the ends of the pipeline. Caps would be installed approximately every five miles. In addition, Equitrans would cap and vent the pipeline at all road, railroad, stream, and wetland crossings; fill the segment with cement; and cap the other end. All dig-ups to cap and vent the Existing Segment would occur within the construction right-of-way for the Replacement Segment. Equitrans would comply with the applicable pipeline safety standards during abandonment of existing facilities, including federal standards provided in 49 CFR 192.727.

Equitrans would also remove existing aboveground appurtenances and small sections of pipe along the Existing Segment, as shown in table A-1 and appendix A. Facilities to be abandoned include a pig launcher, two pig launcher/receivers, six mainline valves, three meters, two pipeline drips, two segments of exposed pipe, two areas of miscellaneous aboveground piping, one pig signal, and one residual waste tank. In addition, Equitrans would remove the TP-7625/TP-301 tie-in and aboveground valve facilities at the existing Valley Compressor Station (MP 0.0), as well as existing pig launcher/receivers at the existing Egry Compressor Station (MP 20.8). Each facility would be disconnected from the source of gas, purged, and removed; any open connections would then be capped. All ground disturbance for facility removal would be within the construction right-of-way for the proposed Replacement Segment.

The current maintained right-of-way for the Existing Segment is 60 feet wide; 40 feet of that would become the permanent right-of-way for the Replacement Segment, where the two segments would be collocated (see table A-3). The remaining 20 feet of existing right-of-way width would be allowed to revegetate to natural conditions (see figures 2 and 3).

7. Non-Jurisdictional Facilities

Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the FERC. These non-jurisdictional facilities may be integral to a project (for instance, a gas-fueled power plant at the end of a jurisdictional pipeline) or they may be minor, non-integral components of the jurisdictional facilities that would be constructed and operated because of a project. Although no non-jurisdictional facilities have been identified for the proposed Project, Equitrans would use an existing power pole to support the proposed new Walnut Road groundbed at MP 1.7 and would coordinate with West Penn Power to power the Walnut Road groundbed.

7. Permits and Approvals

The environmental permits and approvals, administering agencies, and status of Project correspondence are presented in table A-8.

Table A-8
Environmental Permits, Approvals, and Consultations for the TP-371 Project

Administering Agency	Permit/Approval/Consultation	Status
Federal		
FERC	Certificate of Public Convenience and Necessity	Application submitted July 10, 2015.
U.S. Army Corps of Engineers, Pittsburgh District	Clean Water Act (CWA), Section 404	Application submitted July 10, 2015, permit issued November 19, 2015.
FWS, Pennsylvania Field Office	The Endangered Species Act of 1973, Section 7 Consultation Species and Migratory Bird Treaty Act Consultation and Clearance	Initial consultation submitted for review on April 29, 2015. FWS provided concurrence on November 16, 2015.
Tribal Historic Preservation Office or Federally Recognized Native American Organizations	Native American Tribes Consultation	Letters submitted on May 6, 2015. Copy of draft survey report submitted to the Delaware Tribe of Indians on July 8, 2015
State		
Pennsylvania Historical and Museum Commission – Bureau for Historic Preservation	Section 106 of the National Historic Preservation Act Clearance	Draft survey report submitted on June 30, 2015. Supplemental survey reports submitted on October 2 and December 18, 2015. Concurrences with reports were provided on August 12, November 3, and December 23, 2015, respectively.
PADEP– Bureau of Water Standards and Facility Management	PAG-10 – General Permit for Discharges Resulting from Hydrostatic Testing of Tanks and Pipelines	15-day prior notification would be submitted per existing statewide permit.
PADEP – Bureau of Water Standards and Facility Management	Section 105 General Permit 5 (Utility Line Crossings), General Permit 8 (Temporary Road Crossings), General Permit 11 (Maintenance) and CWA Section 401 Water Quality Certificate	Application submitted on July 10, 2015.
PADEP – Southwest Regional Office	Erosion and Sediment Control General Permit for Earth Disturbance Associated with Oil and Gas Exploration, Production, Processing, or Treatment Operations or Transmission Facilities (ESCGP-2)	Application submitted on September 18, 2015.[a]
PADEP – Southwest Regional Office	Submerged Lands License Agreement for crossing the Crooked Creek Recreation Area.	Application submitted on December 7, 2015.
Pennsylvania Fish and Boat Commission	Threatened and Endangered (T&E) Species Consultation and Clearance	Consultation letter submitted on April 29, 2015. Per May 13, 2015 and December 18, 2015 responses, no effect anticipated for known element of occurrence.
PDCNR	T&E Species Consultation and Clearance	Consultation letter submitted on April 29, 2015. Per May 28, 2015 response, no further coordination needed.
Pennsylvania Game Commission	T&E Species Consultation and Clearance	Consultation letter submitted on April 29, 2015. Per May 8, 2015 response, no further coordination needed.

[a] The Armstrong County Conservation District is the delegated authority for approval of this permit. The application was submitted to the Armstrong County Conservation District and the Indiana County Conservation District.

B. ENVIRONMENTAL ANALYSIS

Construction and operation of the Project would have temporary, short-term, long-term, or permanent impacts. As discussed throughout this EA, temporary impacts are defined as occurring only during the construction phase. Short-term impacts are defined as lasting between one and three years. Long-term impacts are defined as lasting three years or more. Permanent impacts are defined as lasting throughout the life of the Project.

7. Geology and Soils

1.1 Geology

The proposed Project area is in the Pittsburgh Low Plateau section of the Appalachian Plateaus province, where elevations range from 660 to 1,700 feet above sea level (PDCNR 2015a, 2015b). It is underlain by a diverse array of alternating sandstone, siltstone, shale, limestone, and coal (PDCNR 2015a). The topography consists of a smooth, undulating upland surface cut by numerous narrow, relatively shallow valleys.

The general geologic setting of the Project may pose potential erosion and landslide hazards in areas of moderate to steep side slope in the Appalachian Plateaus province (PDCNR 2015a). In addition, several geologic features would be crossed by the proposed Project, including areas with active coal mining and oil and gas production, as described below.

Paleontological Resources

Paleontological resources are the fossilized remains of prehistoric plants and animals, as well as the impressions left in rock or other materials. Significant paleontological resources are not anticipated to occur in the Project area (Hoskins 1999). Because the Project would be constructed primarily within an existing disturbed right-of-way, no impacts on paleontological resources are anticipated.

Mineral Resources

The construction and operation of the Project over mineral resources could affect the present and future extraction of those resources. Mineral resources near the Project include coal, oil and natural gas, and nonfuel mineral resources, for example, sand and gravel deposits. The Project would cross abandoned coal mines and active oil and natural gas wells, but would not cross sand and gravel quarries.

Coal Resources

Information regarding coal mining activities and locations in the proposed Project area was obtained from the USGS topographic maps, the Pennsylvania Geospatial Data Clearinghouse ([PGDC] 2015), and Equitrans' field surveys. Although one active surface coal mine and two active underground coal pillar mines are located within 0.25 mile of the proposed Project, no active mines would be crossed.

The Project and its workspaces would cross four abandoned surface and underground mines, as well as one abandoned mine spoil area (see table B-1). Unknown historic underground mines could be encountered during construction of the Project; however, because the Replacement Segment would generally be collocated with the Existing Segment, it is unlikely that an unknown underground mine would be encountered. The main concern with crossing abandoned underground coal mines is the potential for subsidence, which could affect the integrity of the pipeline. Subsidence associated with coal mining is discussed below.

Table B-1
Coal Mines Within TP-371 Project Workspaces

Begin Milepost	End Milepost	Operation	Status
0.9	1.3	Underground Mine	Abandoned
1.7[a]	-	Underground Mine	Abandoned
8.2	8.2	Coal Surface Mine	Abandoned
9.7	9.8	Coal Surface Mine	Abandoned
17.4	17.5	Spoil Area	Abandoned

[a] The mine would be below ATWS-7 and crossed by AR03TAR, but would not be crossed by the pipeline right-of-way.

Two mining companies (Western Alleghany Energy and Rosebud Mining Company) have identified future mining reserves in the vicinity of the Project. Equitrans is consulting with the mining companies to map potential future coal mining relative to the Project and identify mitigation measures to minimize impacts of future coal mining on the Project. Should these discussions identify future mining under the proposed pipeline, Equitrans would work with the mine owner to ensure the safety of the pipeline system and would implement its design standards for mining activities proximate to pipeline and surface facilities, as appropriate.

In comments provided during the scoping period, Consol indicated that it owns an abandoned mine (the Margaret No. 7 mine) and associated facilities in the vicinity of the proposed Project. The proposed pipeline would be 1,540 feet from the portal of the abandoned mine, 2,160 feet from the Margaret Upper Treatment Plant, and 580 feet from the Margaret Upper Pump Station. Although neither the mine nor the facilities would be directly impacted by the proposed Project, the Replacement Segment would cross Consol's existing mine water pipeline at MP 1.8, which transports the acidic mine water to a treatment facility, as needed. Equitrans would give Consol a 24-hour notice of the crossing and would implement the measures described in section A.6.2 for foreign utility crossings.

Two abandoned coal refuse disposal facilities are within 0.25 mile of the proposed Project; however, neither would be crossed. Equitrans has committed to train inspection staff and subcontractors to identify coal refuse. In the event that any such areas were identified during construction, samples would be collected and submitted to a certified laboratory for analysis. The results of the samples would be used to confirm that no worker safety concerns exist and to

determine the proper disposal method. Equitrans would take remedial measures in the event it encounters coal refuse along the route of the Project.

Oil and Natural Gas Resources

The proposed Project overlies the Marcellus shale play. Based on geographic information systems data for the affected counties, 200 active oil, gas, and coalbed methane wells as well as two active storage wells are located within 0.25 mile of the proposed Project (PGDC 2015). Table B-2 identifies the wells within the construction workspaces of the proposed Project and the status of each well. Equitrans plans to finalize coordination with oil and gas producers in March, 2016 to determine the potential for future drilling near the proposed Project and pipeline construction activities would be coordinated with those producers to avoid any adverse impacts on the production and transportation of oil and gas.

Table B-2
Active Oil and Gas Wells within TP-371 Project Workspaces

Milepost	Well Type	Status
0.5	Oil & Gas Well	Active
3.3	Oil & Gas Well	Active
11.8	Oil & Gas Well	Active
12.0	Oil & Gas Well	Active
12.8	Storage Well	Active
18.7	Oil & Gas Well	Active
19.9	Oil & Gas Well	Active

Geologic Hazards and Impact Mitigation

Geologic hazards are natural physical conditions that, when active, can result in damage to land and structures, or injury to people. Potential geologic hazards can be related to seismic activities, such as earthquakes and fault rupture. Other potential geologic hazards may include soil liquefaction, landslides, and subsidence. The pipeline alignment was evaluated with respect to those geologic processes that have a high or low potential for occurrence. In addition, Equitrans conducted geotechnical investigations the proposed HDD crossings; the reports confirm that the use of the HDD method is feasible at all six locations.

Seismic Hazards

Counties crossed by the proposed Project occur within a region of low historical earthquake activity. The likelihood of a seismic event with a peak ground acceleration greater than 4 percent of the force of gravity in fifty years is 2 percent, indicating that seismic activity levels in the Project vicinity are low (USGS 2015a). Surficial geologic evidence indicates that no faults have ruptured in Pennsylvania during the Quaternary Period (in the past 1.6 million years) (USGS 2015b). Therefore, the potential for seismic activity due to faults in the Project area is minimal. The design of modern pipeline systems affords protection for all but the most

severe earthquake hazards, including liquefaction, differential settlement, violent shaking, and ground strain. Modern pipelines exhibit elastic behavior and have greater ability to conform to ground movements from vibration and slippage. As such, and because the Project would be in an area with low seismic risk, we conclude that the potential for impacts on the Project from seismicity would be low.

Soil Liquefaction

Soil liquefaction occurs when loose (low density or uncompact), sandy, water-saturated soils temporarily lose their strength and liquefy by strong ground shaking due to earthquakes or other rapid loading. Because the proposed Project area has a low potential for seismic activity and strong ground shaking, soil liquefaction potential is low.

Landslides

Landslides involve the downslope mass movement of soil, rock, or a combination of materials on an unstable slope. The proposed Project is located in an area that has a moderate to high susceptibility to landslides (PDCNR 2015c). Steep slopes cause loose, unconsolidated sediments to collect, resulting in landslides. Potential causes of landslides related to Project construction include vibrations from machinery or traffic, blasting, alterations to slope morphology caused by earthwork, the addition of new loads on an existing slope, removal of deep-rooted vegetation that binds shallow soils to bedrock, or changes in water volume infiltrating into the soil as a result of construction. In areas with steep slopes, soils may be unstable and present erosion management problems when disturbed, often requiring erosion and sedimentation control measures during pipeline construction and operation. Soils on steep slopes are further discussed in section B.1.2. Landslide incidences may be more frequent in areas of steep slopes. About 56 percent of the Project, or 11.8 miles, would traverse slopes greater than 30 percent (see table A-7).

Although neither Equitrans nor the previous owner of the TP-371 pipeline (People's Natural Gas) have reports of landslides along the Project route, Equitrans would implement measures to reduce the potential for slope failure in areas of steep slope and minimize impacts associated with erosion in areas of high landslide potential. Prior to beginning construction, Project personnel would examine the construction areas to identify signs of previous and potential landslides, such as soil fractures, shrubs or trees growing at an angle, and previous earthwork at the site. Where natural drains or swales are identified, Equitrans would implement measures to divert groundwater and surface water, such as installing rock underdrains and pipe slope drains. Following construction, slopes would be returned to their original contours and vegetation would be reestablished in accordance with the FERC Plan and Procedures. Equitrans would implement cut-and-fill construction techniques on steep slopes, as discussed in section A.6.2.

Subsidence

Ground subsidence is a lowering of the land-surface elevation that results from changes that take place underground. Subsidence can range from small, localized areas of collapse to a broad, regional lowering of the ground surface. Common causes of land subsidence include the dissolution of limestone in areas of karst terrain, the collapse of underground mines. Subsidence would also be caused by pumping of water, oil, and gas from underground reservoirs.

Karst

Karst features such as sinkholes, caves, and caverns form as a result of long-term dissolution of soluble bedrock such as carbonate rocks including limestone, dolomite, and gypsum. Because the proposed Project area is not known to contain karst features, the hazards from surface subsidence due to karst is low (PDCNR 2015d).

Mines

Along the proposed pipeline route, several areas of historic underground coal mining have been identified. The locations of abandoned underground mines along the Project route are listed in table B-1. Underground mining poses risks to engineered structures because the overlying strata can collapse into the void formed by coal extraction. There are two types of coal extraction techniques that present the potential to cause ground subsidence and soil strains: longwall mining and room and pillar mining. Both techniques have been used in the region. Longwall mining employs the use of hydraulic supports that are moved forward as the coal is mined away collapsing the rock layers above, while room and pillar mining leaves pillars of mineable materials or, in some cases, timbers to support the mine. Both of these mining techniques create potential surface subsidence hazards.

Subsidence associated with longwall mining is usually immediate; unless there is active longwall mining in the area, the subsidence resulting from longwall mining would likely occur prior to construction of the proposed Project. Conversely, subsidence resulting from failures in underground room and pillar mines may be several feet deep, and cover several acres; land movement may occur over several years. Although the Existing Segment has not experienced previous subsidence concerns, the Project would cross a suspected subsidence prone area between MP 0.9 and 1.3 (PGDC 2015). Equitrans would monitor subsidence for the life of the Project and would implement its established precautionary measures if subsidence were observed, including excavation of the soil over the pipeline to reduce stress. Equitrans would monitor the strain on the pipeline until subsidence is complete, supporting the pipeline or checking for leaks as appropriate. Once the subsidence event appears to be complete, Equitrans would replace excavated soil. Similar measures may be implemented in the event that future mining occurs under the pipeline and Equitrans is coordinating with applicable mining companies to determine plans for future coal mining in the Project area.

In areas of the pipeline route where future longwall mining would occur, Equitrans would develop a mine mitigation plan at that time. Such mitigation may include a permanent or temporary reroute or excavation of the pipeline and implementation of measures relieve strain on the pipeline as settlement occurs.

The pipeline would be designed, installed, and inspected in accordance with DOT's standard in 49 CFR Part 192 to provide adequate protection from unstable soils, landslides, or other geologic hazards that could cause the pipeline to move or to sustain abnormal loads. The regulations require periodic monitoring of the right-of-way during operation to detect abnormal conditions, such as subsidence. Pipeline construction would be limited to the surface geology, as a trench is typically no more than 7 to 10 feet deep. Additionally, Equitrans would implement our Plan and Procedures.

Together, these practices would limit the possible impacts of geologic hazards as discussed above. Construction and operation of the Project would be completed in accordance with DOT requirements to minimize potential risks from geologic hazards. Therefore, we conclude that operational impacts on geologic resources would be minimal.

Flash Flooding

The proposed pipeline would cross the Federal Emergency Management Agency (FEMA) 100-year floodplain at the locations shown in table B-3. According to FEMA, these floodplains have a 1 percent annual chance of a flood event. Bank erosion and/or scour from flash flooding could result in exposure of the pipeline or cause the pipeline to become unsupported. During construction, the mitigation measures described to minimize the potential for landslides would also minimize the potential impacts from flooding. During operation, Equitrans would inspect the pipeline right-of-way periodically for signs of erosion. All pipeline facilities are required to be constructed in accordance with 49 CFR 192.

Table B-3
100-Year Flood Zones Crossed by the TP-371 Project

Begin Milepost	End Milepost	Length (miles)
0.0	0.2	0.2
0.2	0.3	0.1
0.4	0.4	>0.1
10.2	10.2	>0.1
10.9	10.9	>0.1
13.9	13.9	>0.1
18.3	18.5	0.2
18.2	18.2	>0.1
20.0	20.0	>0.1

Source: FEMA 2015.

Blasting

Blasting is sometimes required for pipeline projects located in areas with shallow bedrock. As noted in table B-4 below, shallow bedrock is encountered along 63.9 percent of the Project. However, blasting is not currently anticipated for the proposed Project. Equitrans stated it would avoid blasting on the proposed Project route by breaking apart large stones or bedrock using conventional rock-trenching methods. Furthermore, no blasting is anticipated for installation of the Replacement Segment because of its proximity to the Existing Segment. In the event that blasting becomes necessary, Equitrans would prepare a Project-specific Blasting Plan and activities would be subject to applicable federal, state, and local requirements governing the

use of explosives. Equitrans would file a Blasting Plan with the FERC for our review and approval.

Table B-4
Soil Characteristics and Limitations for the Construction Areas Associated with the TP-371 Project[a]

Facility	Prime, Unique, or Local Farmlands	High Compaction Potential/ Hydric Soils	Highly Water Erodible	Depth of Bedrock < 5 Feet	Low Revegetation Potential
Pipeline Right-of-way	102.5	15.8	11.9	164.6	0.0
ATWS	34.5	3.1	2.8	23.0	0.0
Access Roads	12.0	0.5	0.3	21.5	0.0
Groundbeds	0.9	<0.1	<0.1	1.3	0.0
Other Aboveground Facilities[b]	0.1	<0.1	0.0	0.1	0.0
Total	**149.9**	**19.4**	**15.1**	**210.5**	**0.0**
Percent of Project Area[c]	45.4	5.9	4.6	63.9	00.0

[a] Numbers are reported in acreages. Total acreage does not equal the total impact acreage for the Project as not all soils are classified with limitations and certain soils are classified as having multiple limitations.

[b] Taps, valves, pig launchers, and meters would be located within the pipeline right-of-way.

[c] Totals do not equal 100 percent as not all soils are classified with limitations and certain soils are classified as having multiple limitations.

To the extent practicable, work would be conducted within the existing, disturbed right-of-way adjacent to the existing pipeline. No geologic resources would be affected during abandonment activities, as any required excavation would be limited to the construction footprint. No additional ground would be excavated during operation of the Project and no operational impacts on geologic resources would be expected. With strict adherence to the mitigation measures identified and ongoing consultations with oil and gas well producers and coal mine operators impacts on geologic resources would not be significant.

1.2 Soils

Soil information and tables for the proposed Project were developed using the USDA-NRCS Soil Survey Geographic Database and Web Soil Survey (USDA-NRCS 2003 and 2015a). Potential impacts on soils from the proposed Project are generally associated with soil limitations and certain soil characteristics, as described below.

Standard Soil Limitations

Soils were grouped and evaluated according to characteristics that could affect construction or increase the potential for soil impacts. These characteristics include: prime farmland; compaction-prone and hydric soils; highly erodible soils; the presence of stones and shallow bedrock; and low revegetation potential. An additional soil-related issue considered in the analysis was soil contamination.

U.S. Department of Agriculture Designated Farmland Soils

The USDA-NRCS defines prime farmland as land that has the best combination of physical and chemical characteristics for growing food, feed, forage, fiber, and oilseed crops (USDA-NRCS 2015b). Unique farmland is land, other than prime farmland, that is used for production of specific high-value food and fiber crops. Soils that do not meet all of the requirements to be considered prime or unique farmland may be considered farmland of statewide or local importance if soils are capable of producing a high yield of crops when treated or managed according to accepted farming methods. About 45.4 percent of land potentially affected by the Project is classified as prime, unique, or locally important farmland (see table B-4). Permanent impacts would occur at 12.7 acres of prime, unique, or locally important farmland, including 11.9 acres at access roads, 0.8 acre at groundbed locations, and less than 0.1 acre at aboveground facilities. To minimize potential impacts on farmland from construction of the proposed pipeline, the topsoil would be segregated from the subsoil and would be replaced in the proper order during backfilling and final grading to help ensure post-construction revegetation success. Any compaction caused by construction of the proposed Project would be minimized or remediated as discussed below.

Soil Compaction and Hydric Soils

Soil compaction modifies the structure of soil and, as a result, alters its strength and drainage properties. Soil compaction decreases pore space and water-retention capacity, which restricts the transport of air and water to plant roots. As a result, soil productivity and plant growth rates may be reduced, soils may become more susceptible to erosion, and natural drainage patterns may be altered. Consequently, soil compaction is of particular concern in agricultural areas and in areas of hydric soils. The susceptibility of soils to compaction varies based on moisture content, composition, grain size, and density of the soil. Soils that form under conditions of extended saturation, flooding, or ponding during the growing season may develop anaerobic conditions in the upper horizon, and are considered to be hydric (59 FR 16835). Due to extended periods of saturation, hydric soils can be prone to compaction and rutting.

Soils with a high compaction potential make up 5.9 percent of the proposed Project footprint, as shown above in table B-4. To minimize compaction, Equitrans would limit off-road traffic to those areas required for construction. Equitrans would also use timber mats during construction through saturated wetlands and avoid construction during periods of heavy rainfall and snowmelt to the extent practicable. After construction, areas of heavy compaction would be tilled as necessary and affected areas would be graded and restored to original contours prior to final revegetation.

Soil Erosion

Soil erosion potential is affected by inherent soil characteristics such as texture, grain size, organic content, slope of the land, and the type and density of vegetative cover. Soils most susceptible to erosion by water typically have bare or sparse vegetative cover, non-cohesive soil particles with low infiltration rates, and are located on moderate to steep slopes. About 4.6 percent of the soils that would be affected by construction of the proposed Project are considered to be highly susceptible to erosion by water (see table B-4); none of the soils crossed are highly susceptible to erosion by wind. Equitrans would minimize erosion impacts by using temporary erosion control devices, such as the use of hay bales and silt fencing, in accordance with the FERC Plan. After construction, permanent erosion control devices, such as slope breakers would be installed and vegetation would be established to stabilize the soils.

Shallow Depth to Bedrock

Construction through soils with shallow bedrock (those with bedrock less than 5 feet from the surface) could result in the incorporation of bedrock fragments into surface soils. Shallow bedrock is present along 63.9 percent of the proposed Project (see table B-4). As discussed in section A.6.2, Equitrans would avoid blasting on the proposed Project route by breaking apart large stones or bedrock using conventional rock-trenching methods. To the extent practicable, Equitrans would remove excess rock or stone from the topsoil and exposed subsoil of all disturbed soils in cultivated and rotated croplands, hayfields, pastures, residential areas, and other areas, as requested by landowners, so that the size, density, and distribution of rock in the proposed construction right-of-way would be similar to undisturbed adjacent areas. Excess rock that could not be backfilled would be disposed of in an approved landfill or recycling facility unless approved by the landowner for use as slope stabilization or other construction use.

Low Revegetation Potential

Revegetating areas affected by construction of the proposed Project may be more difficult in areas with poor drainage, shallow depth to bedrock, and steep slopes. No soils found within the proposed Project area were determined to have a low revegetation potential; the potential for successful revegetation for most soils would be high or moderate. Equitrans developed appropriate seed mixes in consultation with the USDA–NRCS, and detailed erosion and sediment control plans to be approved by Armstrong and Indiana County Conservation Districts that would be used during Project construction and restoration to minimize erosion and facilitate quick restoration of disturbance. Where necessary, erosion control fabric or matting would be used on steep slopes to ensure that soils are successfully revegetated. Where applicable, segregated topsoil would be replaced after the subsoil to ensure post-construction revegetation success.

Inadvertent Spills or Discovery of Contaminants

Other potential impacts during construction would include the accidental release of petroleum hydrocarbons or other hazardous materials, as well as the discovery of contaminated soils during trench excavation and grading activities. Soil contamination during construction could result from material spills or trench excavation through pre-existing contaminated areas.

Equitrans would implement its SPCC Plan that specifies cleanup procedures in the event of an inadvertent leak or spill. If contaminated or suspect soils (such as those that are oil-stained) were identified during trenching operations, work in the area would be halted until an appropriate plan of action was determined based on the type and extent of contamination and local, state, and federal regulations.

General Impacts and Mitigation

Construction activities such as clearing, grading, trench excavation, installation, backfilling, and the movement of construction equipment along the right-of-way would impact soil resources. Clearing the right-of-way would remove protective vegetative cover and expose the soil to the effects of wind, rain, and runoff, which increases the potential for soil erosion and sedimentation in sensitive areas. Grading, spoil storage, and equipment traffic can compact soil, reducing porosity and increasing runoff potential, and decrease vegetative productivity. Trenching of shallow depth to bedrock soils can bring stones or rock fragments to the surface that could interfere with agricultural practices and hinder restoration of the right-of-way. Construction activities could also affect soil fertility and facilitate the dispersal and establishment of weeds. In addition, contamination due to spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely affect soils.

To minimize impacts on soils, Equitrans collocated approximately 95 percent of the proposed Replacement Segment with the Existing Segment. In-place abandonment of the Existing Segment precludes trenching for pipe removal, thereby minimizing soil impacts, although minor amounts of excavation would occur to remove aboveground facilities, such as valves and to cut, cap, and grout sections of the abandoned pipeline. Equitrans would implement our Plan and Procedures to minimize impacts on soils associated with the Project. Measures to segregate topsoil from subsoil in non-saturated wetlands, active croplands, residential lands, and in areas requested by the landowner would contribute to post-construction revegetation success, and minimize the loss of crop productivity and the potential for long-term erosion problems. We conclude that Equitrans' adherence to guidance by the USDA-NRCS office and implementation of Armstrong and Indiana County Conservation Districts approved erosion and sediment control plans, and implementation of our Plan and Procedures during construction and restoration, would adequately minimize impacts on soils for the proposed Project.

2. Water Resources and Wetlands

2.1 Groundwater Resources

Existing Groundwater Resources

The Project and associated facilities overlie the Pennsylvanian and Permian consolidated (bedrock) aquifer systems, which occur in southwestern Pennsylvania (Trapp and Horn 1997). A system of shallow (surficial), unconsolidated alluvial aquifer formations that consist of sand and gravel deposits of glacial and alluvial origin exist above the Pennsylvanian and Permian aquifer systems and are generally located along the valleys of major streams. Surficial alluvial aquifers occur along the Allegheny River in Armstrong County, Pennsylvania. Wells completed in Pennsylvanian and Permian aquifers in southwestern Pennsylvania typically yield 30 to 300

gallons of water per minute (Trapp and Horn 1997). Water quality is variable in the Pennsylvanian, Permian, and surficial aquifer systems, but with minimal treatment, it is satisfactory for municipal sources (Trapp and Horn 1997).

Coal mining and improperly plugged oil and gas wells cause the most prevalent groundwater quality concerns in the Project area. Water that has been exposed to mining operations is typically acidic, and commonly contains large concentrations of iron, manganese, sulfate, and dissolved solids (Trapp and Horn 1997). According to the U.S. Environmental Protection Agency (EPA), contaminated groundwater is not present in the proposed Project area (EPA 2015a).

Designated Sole Source Aquifers

The EPA 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. The Project does not cross sole source aquifers (EPA 2011).

Water Supply Wells and Seeps

Equitrans identified six private groundwater wells and five seeps within 150 feet of the Project (see table B-5). In addition, one known public water supply wells is located within 1 mile of the Project, as discussed below.

Table B-5
Private Water Supply Wells and Seeps within 150 feet of the TP-371 Project

Supply Type	Milepost	Distance from Limits of Construction (feet)	Distance from Pipeline Centerline (feet)
Armstrong County			
Private well	0.2	30	55
Seep 1	2.3	0	64
Private well	5.1	0	31
Seep 2	7.2	24	110
Seep 3	7.9	53	112
Seep 4	7.9	0	23
Seep 5	7.9	0	1
Private well	8.5	0	34
Private well	11.3	46	81
Private well	12.7	10	45
Private well	12.8	35	70

Source Water Protection Areas

A SWPA is defined as the drainage area around the point where a public water system withdraws water from a groundwater or surface water source. In Pennsylvania, the SWPA program includes the wellhead protection program. The proposed Project would be about 0.3 mile from one public water supply well so that the pipeline would pass through the Zone II (0.5-mile) buffer for the well (PADEP 2015). SWPAs designated to protect surface water sources are addressed in section B.2.2.

General Impacts and Mitigation

Construction of the pipeline would generally require the excavation of a trench between 7 and 10 feet in depth to allow for a minimum of 3 feet of soil cover, except in consolidated rock, where a minimum of 2 feet of cover would be required. In areas where the water table is near the surface, groundwater could sustain minor impacts from temporary changes in overland water flow and recharge from clearing and grading of the right-of-way. Average annual groundwater depths in Armstrong County have ranged from 18 to 20 feet since 2004; in Indiana County, average annual depth has ranged from 33 to 35 feet (USGS 2015c). However, the water table may be closer to the surface near surface water resources (see section B.2.2). Soil compaction from construction could reduce the ability of the soil to absorb water, thereby reducing groundwater recharge. Construction, operation, and maintenance of the facilities would not be expected to have significant or long-term impacts on groundwater resources with implementation of the FERC Plan and Procedures. Abandonment of the existing pipeline would require minimal ground disturbance and is not expected to impact groundwater as activities would be restricted to the construction right-of-way for the Replacement Segment.

An inadvertent spill of fuel or hazardous materials during refueling or maintenance of construction equipment could also affect groundwater if not cleaned up appropriately. Contaminated soils could continue to leach contaminants to groundwater long after a spill has occurred. To minimize the risk of potential fuel or hazardous materials spills, including spills within the public groundwater well buffer zone, Equitrans would implement its SPCC Plan, which includes spill prevention measures, mitigation measures, and cleanup methods to reduce potential impacts should a spill occur. If Equitrans encounters contaminated soil or groundwater during construction, it would stop work, identify the type and extent of contamination, and develop a response action in adherence to applicable regulations. In the event that the existing pipeline is found to contain free liquids contaminated with polychlorinated biphenyls (PCB), Equitrans would comply with the regulatory requirements identified in the Toxic Substances Control Act (TSCA) and would acquire an EPA-approved disposal permit for contaminated materials to ensure that abandonment activities do not result in contamination of soil or groundwater (see section B.10.1).

Equitrans would flag groundwater wells within 150 feet of the construction area for visibility. Equitrans would offer to conduct pre-construction evaluations of active wells within 150 feet of the construction area. For those wells tested pre-construction, additional post-construction testing for well yield and water quality would also be completed, if requested by the landowner. Equitrans has indicated that two private wells are located within the construction workspace (see table B-5). One well, at MP 5.1 is located at the edge of the permanent right-of-

way and Equitrans could likely neck down to avoid impacts on the well. Based on our review of the alignment sheets, the second well (MP 8.5) is located outside of the construction right-of-way and appears it would not be impacted. In the event that private wells were damaged during construction, Equitrans would negotiate with the landowner to repair or replace the damaged well and would provide affected homeowners with temporary accommodations or a temporary water supply if no other potable water source were available; therefore, **we recommend that:**

- **Within 30 days of placing the facilities in service, Equitrans should file a report with the Secretary discussing whether any complaints were received concerning well yield or water quality and how each was resolved.**

Equitrans would use timber mats over seeps within the construction right-of-way and would minimize grading adjacent to seeps where practicable to minimize impacts. Equitrans does not anticipate that seeps would be excavated during Project construction; however, if trenching within a seep were necessary, Equitrans would segregate topsoil at the seep to minimize impacts. In addition, Equitrans would maintain flow of the seep by using gravel and pipe, if necessary, during backfilling.

Equitrans would implement its SPCC Plan, which prohibits refueling and storage of hazardous materials within 200 feet of identified active private water wells. Blasting is not currently anticipated for the proposed Project; however, if it were required, Equitrans would file a Blasting Plan with the FERC for review and approval to ensure that mitigation measures to protect wells are included.

To avoid or minimize potential impacts, Equitrans would comply with its SPCC Plan, TSCA, and the FERC Plan and Procedures. Therefore, the Project would not result in significant long-term or permanent impacts on groundwater resources in the Project area.

2.2 Surface Water Resources

Existing Surface Water Resources

The proposed pipeline would cross six watersheds. Watershed and crossing length are provided in table B-6. Equitrans conducted field surveys to identify waterbodies in the Project area in May and August 2015; surveys are complete for the entire Project area. Waterbodies are classified as perennial, intermittent, or ephemeral. Perennial waterbodies flow or contain standing water year-round and are typically capable of supporting populations of fish and macroinvertebrates. Intermittent waterbodies flow or contain standing water seasonally, and are typically dry for part of the year. Ephemeral waterbodies generally contain water only in response to precipitation or spring snowmelt.

The proposed Project would cross a total of 65 stream segments, including 26 perennial, 23 intermittent, and 16 ephemeral waterbodies. Further, of the 65 waterbody crossings, 58 are classified as minor (less than 10 feet wide) and 7 are classified as intermediate (10 to 100 feet wide); no major waterbodies (those greater than 100 feet) would be crossed by the Project. Information on each waterbody crossing for the proposed Project, including name, water quality classification, flow regime, crossing width, and crossing method is provided in appendix F. Maps depicting the waterbody crossings are provided in appendix A.

Table B-6
Watersheds Crossed by the TP-371 Project

Hydrologic Unit Code 12 Watershed	Crossing Length (miles)	Drainage Area (acres)
Crooked Creek-Allegheny River (050100061005)	4.3	33,740
Cherry Run (050100061004)	6.5	17,317
Curry Run-Crooked Creek (050100061003)	0.6	31,734
Lower Cowanshannock Creek (050100060802)	2.1	21,731
Conemaugh River-Kiskiminetas River (050100071008)	0.2	35,160
Blacklegs Creek (050100080201)	7.2	29,127

In addition to the streams that would be crossed, one open water pond would be within the Project construction workspace at MP 14.8. Equitrans would surround the pond with construction fencing and avoid direct impacts during construction. Two additional waterbodies (one pond and one ephemeral stream) are crossed by the Existing Segment but are not within the Project workspace for the Replacement Segment; these waterbodies would not be affected Project construction.

One waterbody would be within the boundaries of the existing Beagle Club Road groundbed (MP 14.2), but would be crossed using a span or mat bridge. No other waterbodies would be within the workspace for aboveground facilities. Portions of the pipeline would cross the 100-year floodplain; no aboveground facilities would be located within the 100-year floodplain (see section B.1.1).

Sensitive Waterbody Crossings

Sensitive waterbodies include those that have been specially designated by the state as high quality or exceptional value waterbodies, wild and scenic rivers, waters supporting fisheries of special concern, and waterbodies classified as impaired under Section 303(d) of the Clean Water Act (CWA). The proposed Project would not cross designated High Quality, Exceptional Value waterbodies, or state or federal wild and scenic rivers. The Project would cross two fisheries of special concern (Approved Trout Waters), which are discussed in section B.3.2.

States are required to submit a list of prioritized impaired waters under Section 303(d) of the CWA to the EPA every two years for approval. Pennsylvania's 303(d) list identifies waters within that state that do not or will not meet water quality standards after treatment and pollution controls are applied (PADEP 2014). The Project would cross two 303(d) listed impaired waterbodies, including Whisky Run (MP 13.9 and within the Beagle Club Road groundbed) and Blacklegs Creek (MP 18.4). Whisky Run is impaired for metals and would be crossed at MP 13.9 using dry-ditch methods. Where the existing Beagle Club Road groundbed is located within

Whisky Run, Equitrans would cross it using a span or mat bridge and protect the waterbody using erosion and sediment controls per the Procedures.

Blacklegs Creek (MP 18.4) is impaired for metals and is also designated as an Approved Trout Water (see section B.3.2). Equitrans would avoid impacts on Blacklegs Creek by crossing the waterbody using an HDD. A second Approved Trout Water, Cherry Run (MP 6.9) would be crossed by dry-ditch methods. None of the waterbodies crossed by the proposed Project are listed as containing areas of probable concern for sediment contamination (EPA 2004).

Surface Water Intakes and Source Water Protection Areas

No potable surface water intakes are located within 3 miles downstream of the proposed Project (PADEP 2015). Equitrans consulted with the PADEP Bureau of Safe Drinking Water and determined that the proposed Project is not located within 0.5 of any surface water SWPA or within 5 miles of any surface water intakes for public water supply.

General Impacts and Mitigation

Equitrans proposes to cross each waterbody with perceptible flow using HDD, bore, or dry-ditch open cut crossing methods (dam-and-pump or flume) (see appendix F). No waterbodies with perceptible flow would be crossed by conventional "wet" open-cut methods. Waterbody crossings would be constructed in accordance with state and federal permits, our Procedures, and approved deviations from our Procedures as requested by Equitrans (see appendix C). We have reviewed Equitrans' proposed alternative measures to our Plan and Procedures and find them acceptable. Typical waterbody crossing methods are described in section A.6.2.

Equitrans would limit the construction right-of-way to 75 feet at waterbody crossings, and would install erosion controls to minimize impacts. Equitrans would install pipe with a minimum of 3 feet of cover from the waterbody bottom to the top of the pipeline, except in consolidated rock, where a minimum of 2 feet of cover would be required. The HDD crossings would be installed significantly deeper than the minimum requirement (at least 20 feet deep). Trench spoil would be placed at least 10 feet from the waterbody edge for use as backfill, and temporary erosion controls would be installed to prevent migration of trench spoil into the waterbody.

Pipeline construction could result in temporary impacts on water quality due to increased turbidity from construction in or near flowing surface waters. The highest levels of sediment would be generated by use of the wet open-cut method; however, this crossing method is not proposed for use in waterbodies with perceptible flow at the time of crossing. Where waterbodies are crossed via bore or HDD, direct impacts would generally be avoided. However, if an inadvertent release of HDD drilling fluid occurs within a waterbody, the resulting turbidity could temporarily affect water quality. Equitrans would implement the measures in its HDD Contingency Plan, which addresses measures for prevention, detection, required notifications, and mitigation for inadvertent returns. Equitrans would use water from municipal sources for HDD construction, thereby avoiding impacts on surface water resources from water withdrawals. In addition, Equitrans' adherence to measures in its SPCC Plan, including locating hazardous

material storage and equipment refueling activities at least 100 feet from waterbodies, would reduce the potential for hazardous materials to enter waterbodies.

After installation of the pipe, Equitrans would replace the excavated spoil in the trench and restore the streambed and banks as close as practicable to their pre-construction contours. During final restoration, Equitrans would seed stream banks and riparian areas in accordance with applicable agency requirements and our Procedures. Where flow conditions would not allow for stabilization via revegetation, Equitrans would implement additional measures, such as the use of riprap, to stabilize waterbody banks. Excavation associated with pipeline abandonment activities would occur in limited areas located outside of waterbodies. Equitrans would implement erosion and sedimentation control measures per the Procedures to minimize the potential for impacts during abandonment.

ATWS would be located in accordance with our Procedures unless otherwise requested by Equitrans and approved in advance by the FERC. Where Equitrans requests an alternative measure from our Procedures regarding the placement of ATWS, sufficient erosion and sediment control devices would be installed and maintained to achieve an equal level of protection to the waterbody (see appendix C).

The temporary and permanent access roads required for construction of the pipeline would require waterbody crossings (see appendix F). Waterbodies would be crossed using a span or mat bridge and temporary culverts would be installed to maintain waterbody flow. New temporary access roads would be restored to pre-construction conditions, unless otherwise agreed upon by the landowner. One permanent access road would cross an ephemeral unnamed tributary to Cherry Run near MP 4.7; Equitrans would install a culvert and span/mat bridge to maintain flow.

Implementation of our Plan and Procedures as well as applicable permit conditions would minimize and mitigate impacts on surface waters, including sensitive surface waters. Therefore, we conclude that the Project would not have a significant impact on surface waters.

Hydrostatic Testing

In accordance with DOT regulations, Equitrans would conduct hydrostatic testing of the pipelines prior to placing them into service. Hydrostatic testing is a method by which water is introduced to segments of pipe and then pressurized to verify the integrity of the pipeline. Equitrans would obtain hydrostatic test water for new pipe from municipal sources and would discharge used water to well-vegetated upland areas to minimize potential erosion. Table B-7 presents the withdrawal and discharge locations, sources, and estimated quantities of hydrostatic test water for the proposed Project. Equitrans would reuse water during hydrostatic testing of pipeline sections and welds, if possible, to reduce total water use.

Test water for the new pipe would be discharged to well vegetated areas along the pipeline through energy-dissipating devices to prevent erosion. Test water may also be collected and discharged off-site at an approved treatment facility. Test water would contact only new pipe, and no chemicals would be added; however, if chlorinated water were used, a dechlorinating agent would be added prior to discharge.

Table B-7
Water Use for Hydrostatic Testing

Discharge Locations (milepost)	Water Needed if Entire Pipeline Filled (gallons)	Water Needed if Testing is Transferred Between Segments (gallons)	Water Source
10.5	824,337	824,337	Municipal
20.8	793,230	N/A	Municipal
Total	**1,617,567**	**824,337**	--

Environmental impacts from the discharge of test water would be minimized by implementing measures outlined in our Procedures and following requirements specified in PADEP hydrostatic test water discharge permit, including those for chlorine effluent limitations. Therefore, impacts from discharge of hydrostatic test water are expected to be temporary and minimal.

2.3 Wetlands

The U.S. Army Corps of Engineers (COE) and EPA jointly define wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (COE 1987). We define wetlands as any area that is not 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.

Existing Wetland Resources

Wetlands crossed by the proposed Project were field delineated by Equitrans in 2015 following the COE Wetlands Delineation Manual, as well as the Regional Supplement for the Eastern Mountain and Piedmont Region (COE 1987, COE 2012a). Equitrans conducted field surveys to identify waterbodies in the Project area in May and August 2015; surveys are complete the entire of the Project area. The basic wetland types delineated in the Project area are summarized in table B-8.

A total of 46 wetlands would be crossed by the Project, including 36 in Armstrong County, 9 in Indiana County, and one in Westmoreland County (see appendix G). Wetland types were assigned using the National Wetlands Inventory classification system (Cowardin et al. 1979). Palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO) wetlands were documented in the Project area. PEM wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens; PSS wetlands contain emergent vegetation with woody vegetation less than 20 feet tall; and PFO wetlands are dominated by hydrophytic tree species at least 20 feet tall.

Table B-8
Wetland Impact Summary of the TP-371 Project

County/ National Wetlands Inventory Classification[a]	Wetland Area Affected During Construction (acre)[b]	Wetland Area Affected During Operation (acre)[b]
Armstrong County		
PFO	<0.1	<0.1
PSS	0.3	0.0
PEM	3.0	<0.1
Subtotals	**3.4**	**<0.1**
Indiana County		
PFO	0.0	0.0
PSS	0.0	0.0
PEM	0.2	0.0
Subtotal	**0.2**	**0.0**
Westmoreland County		
PFO	0.0	0.0
PSS	0.0	0.0
PEM	0.0	0.0
Subtotal	**0.0**	**0.0**
Project Summary[c]		
Subtotal PFO	<0.1	<0.1
Subtotal PSS	0.3	0.0
Subtotal PEM	3.2	<0.1
Project Total	**3.5**	**<0.1**

[a] National Wetlands Inventory wetland types: PFO = palustrine forested; PSS = palustrine scrub-shrub; and PEM = palustrine emergent.

[b] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends.

[c] Includes all wetland impacts for the Project.

General Impacts and Mitigation

Construction of the proposed Project would affect about 3.5 acres of wetlands, including less than 0.1 acre of PFO wetland, 0.3 acre of PSS wetland, and 3.2 acres of PEM wetland. Certain ATWS requested for use during construction would be adjacent to wetlands in areas requiring special construction, such as in areas of steep topography and road crossings. Where Equitrans has proposed an alternative measure to our Procedures regarding the placement of ATWS, timber mats or similar devices would be used to minimize impacts from rutting and compaction and sufficient erosion and sediment control devices would be installed and maintained to achieve an equal level of protection to the wetland. In addition, one wetland is

located within Laydown Yard 7; however, it would be fenced off from construction activities so that no impacts on the wetland would occur. Less than 0.1 acre each of PFO and PEM wetland would be affected by operation of the proposed Project. The wetland at MP 11.8, comprised of PFO and PEM, would be impacted due to work area to accommodate crossings of a wetland and waterbody, as well as bore crossing of State Road 56. The PFO wetland would be permanently converted to PEM wetland within the permanent right-of-way. Also, PEM wetlands would be lost due to placement of a new permanent access road (AR01PAR near MP 0.0) that would be placed between the fenceline of an existing, third-party facility and a public road (Margaret Road). AR01PAR would allow access to the Project area using the existing facility's access off of Margaret Road to the extent possible, while precluding Project vehicles and equipment from using the public road (see appendix C). The access road would be placed within areas that are currently maintained as grass/herbaceous lands, and moving the proposed access road to the opposite side of the existing facility would require clearing of trees; therefore, we conclude that Equitrans has adequately justified the location of the access road and the resulting minor permanent impact to PEM wetlands. Table B-8 summarizes impacts of the proposed Project on wetlands. Detailed information regarding each wetland that would be crossed by the Project is included in appendix G.

The primary impact of Project construction on wetlands would be the potential alteration of wetland vegetation due to clearing, excavation, rutting, compaction, and mixing of topsoil and subsoil. Construction could also affect water quality within wetlands due to sediment loading or inadvertent spills of fuel or chemicals. Temporary construction impacts on wetlands could include the loss of vegetation; soil disturbance associated with grading, trenching, and stump removal; and changes in the hydrological profile. Impacts on PFO wetlands could also include long-term or permanent conversion to PEM and/or PSS wetland types through tree removal. In the case of conversion of wetland vegetation type, no permanent loss of wetlands would occur, but functional changes to the wetland community would result.

Impacts on wetlands would be greatest during and immediately following construction. The majority of these effects would be short-term in nature and would cease when, or shortly after, the wetlands are restored and revegetated. Following revegetation, the wetland would eventually transition back into a community with functionality similar to that of the pre-construction state. In emergent wetlands, the herbaceous vegetation would regenerate quickly (typically within 1 to 3 years). Equitrans would cross wetlands in accordance with state and federal permits and our Procedures. The wetland crossing method would depend on site-specific conditions present during construction, as discussed in section A.6.2.

Saturated wetlands include those with standing water or completely saturated soils at the time of construction. Topsoil segregation is generally not practical in saturated wetlands. Otherwise, construction would be similar as described for unsaturated wetlands. Saturated wetlands would be crossed utilizing timber mats to avoid rutting. Tree stumps and root systems would be removed from areas directly over the trenchline. In the absence of safety-related construction constraints, stumps and root systems would be left in place in the remainder of the construction right-of-way. Equitrans would segregate the topsoil up to one foot in depth in wetlands where hydrologic conditions permit. Segregated topsoil would be placed in the trench following subsoil backfilling. Restoration and monitoring of wetland crossings would be

conducted in accordance with FERC's Procedures. Unless standing water is present, wetlands would be seeded with annual rye grass and other species recommended by the PADEP.

Equitrans would grout the Existing Segment underneath each wetland, cutting the pipe outside of the wetland boundaries so that no excavation within wetlands would occur for abandonment activities. Excavation associated with pipeline abandonment activities near wetlands could result in temporary impacts on wetlands due to sedimentation and vegetation disturbance.

Equitrans would minimize wetland impacts by implementing the construction and mitigation measures outlined in our Procedures and adhering to applicable permit requirements. In addition, Equitrans plans to use bore or HDD methods to avoid impacts on multiple wetlands. General construction and mitigation measures from our Procedures include:

- limiting construction right-of-way width in wetlands to 75 feet;
- limiting construction equipment in wetlands 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;
- installing sediment barriers immediately after initial ground disturbance within the right-of-way between wetlands and uplands, across the entire right-of-way immediately upslope of the wetland boundary, and along the edge of the right-of-way as necessary to contain spoil within the right-of-way and to protect adjacent off-right-of-way wetland areas;
- minimizing the length of time that topsoil is segregated and the trench is open;
- prohibiting the use of rock, soil imported from outside the wetland, tree stumps, or brush riprap to stabilize the right-of-way;
- using low ground weight equipment or operating equipment on timber riprap on saturated soils or where standing water is present;
- installing trench plugs as necessary to maintain the original wetland hydrology;
- prohibiting the use of lime, fertilizer, or mulch during the restoration of wetlands;
- seeding wetland areas with annual rye grass and species recommended by the PADEP; and
- limiting vegetation maintenance on the operational right-of-way in wetlands to a 10-foot-wide herbaceous corridor centered over the pipeline and the cutting and removal of trees and shrubs greater than 15 feet in height that are within 15 feet of the pipeline centerline.

We conclude that wetland impacts associated with the construction and operation of the Project would be minimized by using our Procedures and applicable permit conditions. Further,

on November 19, 2015, the COE authorized the Project under the Pennsylvania State Programmatic General Permit.

2. Vegetation, Aquatic Resources, and Wildlife

3.1 Vegetation

Existing Vegetation Resources

The proposed Project is within the Pittsburgh Low Plateau of the Western Allegheny Plateau Ecoregion, which consists of hilly terrain with extensive forests (Omernik 1987). Construction and operation of the Project would affect the following general vegetative cover types: agricultural land, forested land, open land (including herbaceous and shrub-scrub land), wetlands, and residential land (see table B-9). Impacts on developed lands are discussed in section B.5.1.

Agricultural land within the Project area is used for growing corn and soybeans. The proposed Project would disturb about 45.3 acres of agricultural land, of which 19.4 acres would be in the permanent right-of-way.

Forested areas in the proposed Project area have been previously disturbed by activities such as agricultural, mining, or logging, creating early successional forest cover types (Pennsylvania Fish and Boat Commission [PFBC] 2008). Early successional forests are composed of young pioneer tree species that lack a closed, mature tree canopy. Species documented during field surveys included black cherry, gray birch, hawthorn, flowering dogwood, big-tooth aspen, red pine, Russian olive, northern prickly ash, eastern white pine, red maple, black cherry, northern white oak, slippery elm, flowering dogwood, and hawthorn. Other common tree species in the Western Allegheny Plateau Ecoregion include American beech, tulip poplar, basswood, buckeye, red oak, and eastern hemlock (Bailey 1995). The pipeline facilities would disturb about 79.5 acres of forested upland, of which 14.2 acres would be in the maintained right-of-way or an aboveground facility (the proposed new Walnut Road groundbed). Both groundbeds would be maintained in an herbaceous state during operation of the Project.

The pipeline facilities would disturb 131.9 acres of open land, of which 79.1 acres would be maintained as permanent right-of-way. Field surveys conducted by Equitrans within open land habitats identified grass and herbaceous species including common blue violet, Kentucky bluegrass, English plantain, Indian hemp, common yarrow, garden yellow rocket, cut leaf toothwort, curly dock, ironweed, Canada goldenrod, red clover, teasel, Virginia rye grass, raspberry, mayapple, crown vetch, thistle, garlic mustard, spiny cocklebur, Indian strawberry, orchard grass, common milkweed, and alfalfa.

A total of 3.5 acres of wetlands would be temporarily affected by construction of pipeline facilities, including less than 0.1 acre of forested wetland. Operation and maintenance of the Project would result in permanent impacts on less than 0.1 acre each of forested wetlands and herbaceous wetlands; no scrub-shrub wetlands would be affected by operations. A more detailed discussion of wetland types and impacts is discussed in section B.2.3.

Table B-9
Construction and Operation Impacts on Vegetation Types in the TP-371 Project Area[a,b]

Facility	Agricultural Land		Forested Land		Open Land[c]		Forested Wetlands		Non-Forested Wetlands[d]		Residential Land		Total	
	Con[e]	Op[e]	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op
Pipeline Facilities														
Pipeline Right-of-way and ATWS	44.9	19.3	76.0	13.6	117.0	78.6	<0.1	<0.1	3.4	0.0	1.0	0.5	242.3	112.0
Groundbeds	0	0.0	0.6	0.6	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1
Access Roads	0.4	0.1	2.9	0.0	0.8	0.0	0.0	0.0	0.1	<0.1	0.0	0.0	4.2	0.1
Laydown Yards	0	0.0	0.0	0.0	13.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.6	0.0
Project Total[f]	**45.3**	**19.4**	**79.5**	**14.2**	**131.9**	**79.1**	**<0.1**	**<0.1**	**3.5**	**<0.1**	**1.0**	**0.5**	**261.2**	**113.2**

[a] All numbers are reported in acreages. Construction impact acreages are based on a 100-foot-wide construction right-of-way in uplands and a 75-foot-wide construction right-of-way in wetlands. Operational impact acreages are based on a 50-foot-wide permanent right-of-way.

[b] The acreage numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends.

[c] Open land includes non-forested open land, scrub-shrub land, and pipeline rights-of-way.

[d] Non-forested wetlands include PEM and PSS wetlands.

[e] Con = Construction; Op = Operation.

[f] Acreages include valves and taps since they would be located within the permanent right-of-way.

Residential lawns in the Project area consist of species such as dandelion, Kentucky bluegrass, purple dead nettle, clover, English plantain, and great plantain. Pipeline facilities would impact 1.0 acre of residential land, of which 0.5 acre would be maintained in the right-of-way.

Construction of access roads to support construction of the Project would include 0.4 acre of agricultural land, 2.9 acres of forested land, 0.1 acre of emergent wetlands, and 0.8 acre of open land. Use of permanent access roads would result in the conversion of 0.1 acre of agricultural land and less than 0.1 acre of emergent wetland for the life of the Project.

Vegetation Communities of Special Concern

Equitrans consulted with the FWS and the PDCNR to determine the presence of sensitive or protected vegetation within the Project area. No federally- or state-listed threatened or endangered plant species or vegetation communities of special concern were identified in the Project area during either agency consultations or field surveys. Threatened or endangered species are further discussed in section B.4.

Noxious and Invasive Weeds

Noxious or invasive plant communities can out-compete and displace native plant species, thereby negatively altering the appearance, composition, and habitat value of affected areas. Plant species identified as noxious and invasive by the PDCNR were observed within the Project area during Equitrans' field surveys, including Morrow's honeysuckle, Canada thistle, garlic mustard, Japanese honeysuckle, Japanese knotweed, Japanese stiltgrass, multiflora rose, and purple loosestrife (PDCNR 2015e).

General Impacts and Mitigation

The proposed Project would impact 261.2 acres of vegetation during construction; 113.2 acres would be affected for the operational life of the Project. Table B-9 summarizes the temporary construction and permanent operational impacts of the Project on each vegetation community type. Impacts on developed lands are discussed in section B.5.1.

To reduce the impacts on existing vegetation, 95 percent of the Project, by length, would be collocated with the existing permanent right-of-way. The Replacement Segment centerline would be offset approximately 10 to 15 feet from the Existing Segment centerline. In addition, 78 percent of the proposed permanent right-of-way would be located within lands already cleared for the Existing Segment right-of-way. Areas of the existing right-of-way that would not be used by the Replacement Segment would be allowed to revegetate to natural conditions.

Prior to construction, the pipeline right-of-way and workspaces would be cleared of vegetation to the extent necessary to allow for safe working conditions. Equitrans may also hand-clear small-diameter vegetation in heavily vegetated areas along the path for laying the telemetry cable where the HDD method would be used. Where possible (for example, in temporary workspaces), tree stumps and roots would be left in place to facilitate natural revegetation. Cleared timber and vegetation would be stacked in accordance with landowner preferences, or would be burned or chipped in accordance with landowner preferences and local

ordinances. Erosion and sedimentation controls would be installed according to the FERC Plan following soil disturbance.

During construction and operation of the TP-371 Project, Equitrans would use existing access roads to the maximum extent possible; however, 13 new access roads, including 3 new permanent access roads and 10 new temporary access roads are proposed to support Project construction. The construction of access roads would impact 4.2 acres of vegetation, of which 2.9 acres are forested. The only vegetated areas affected by permanent access roads are 0.1 acre of agricultural lands and less than 0.1 acre of emergent wetlands, as shown above in table B-9. Equitrans' placement of certain laydown yards would also temporarily impact 13.6 acres of open land. Areas within temporary workspaces (including staging areas and laydown yards) and temporary access roads would be returned to pre-Project conditions and allowed to revegetate after construction.

During operation, maintenance of the permanent pipeline right-of-way would be necessary to allow for visibility and access for pipeline monitoring and maintenance activities. In upland areas, the permanent right-of-way would be 50 feet wide. The entire right-of-way would be mowed every 3 years, and a 10-foot-wide corridor centered on the pipeline could be mowed at a frequency necessary to allow for periodic pipeline surveys. In wetlands, maintenance of the permanent right-of-way would be limited to a 10-foot-wide corridor that may be cleared at a frequency necessary to allow for periodic pipeline surveys. In addition, trees within 15 feet of the pipeline may be selectively cut and removed. Portions of the abandoned pipeline right-of-way would be allowed to revert to forest in those areas that are forested offsetting the permanent clearing of the Replacement Segment. Equitrans developed appropriate seed mixes in consultation with the USDA–NRCS, and Armstrong and Indiana County Conservation Districts that would be used during Project restoration.

After construction has been completed, Equitrans would monitor revegetation success during the first and second growing seasons in uplands, and during the first, second, and third growing seasons in wetland areas. Revegetation would be considered successful if the density and cover of non-nuisance vegetation were similar in density and cover to adjacent undisturbed lands, or in accordance with any state or local permit requirements.

Community-Specific Impacts

Impacts on upland or wetland forest vegetation from construction of the Project would be long-term. Re-growth of trees to pre-construction condition would take 20 to 30 years for many species, such as eastern white pine. Hardwood species, such as oaks, could take more than 50 years to reach maturity, although impacted forests are young, due to periodic timber harvests. Forested vegetation in the permanent right-of-way would be maintained in an herbaceous state through the operational life of the Project. Additionally, 0.6 acre of forested land would be permanently converted to open land during construction and operation of the groundbeds.

The term "edge effect" is commonly used in conjunction with the boundary between natural habitats, especially forests, and disturbed or developed land, such as pipeline corridors. Where land adjacent to a forest has been cleared, creating an open/forest boundary, sunlight and wind penetrate to a greater extent, resulting in tree destabilization from increased wind shear,

drying out of the interior of the forest close to the edge, encouraging growth of opportunistic species at the edge, and changing air temperature, soil moisture, and light intensity (Murcia 1995). Fragmentation of forested areas can result in changes in vegetation (for example, invasion of shrubs along the edge); however, forests within the proposed Project area have been previously fragmented by the Existing Segment, other infrastructure (other utility easements, roads, and a railroad) and clearing for agriculture. Due to the nature of the replacement Project, approximately 95 percent of the Replacement Segment would be collocated with the Existing Segment, by distance.

For non-forested vegetation types, including agricultural lands, open lands, and non-forested wetlands, construction of the pipeline would generally be short-term and temporary. Agricultural lands generally return to crop production the season following construction. Herbaceous areas would return to their vegetative cover within 1 to 3 years, and shrub-scrub areas would return to their vegetative cover within 3 to 5 years post-construction. To facilitate revegetation, Equitrans would re-seed disturbed areas using seed mixes recommended by local soil conservation authorities, landowners, or land managing agencies, and measures described in the FERC Plan and Procedures.

Mitigation

To minimize direct and indirect impacts on vegetative communities from construction and operation of the Project, Equitrans would implement the measures in the FERC Plan and Procedures, including:

- minimizing vegetative clearing through use of existing rights-of-way, where practicable (about 95 percent of the proposed route);
- using existing roads for access to the Project where practicable;
- installing temporary erosion control measures, such as slope breakers, sediment barriers, and mulch;
- visually inspecting agricultural lands to ensure that crop growth and vigor in areas affected by construction is similar to those of adjacent portions of the same field, or as otherwise agreed to by the landowner; and
- annual monitoring and reporting to FERC to document the status of revegetation until deemed successful.

Revegetation would be considered successful when native vegetation cover and diversity within the disturbed areas are similar to adjacent, undisturbed lands. Based on the types and amounts of vegetation affected by the Project and Equitrans' proposed avoidance, minimization, and mitigation measures to limit Project impacts, we conclude that impacts on vegetation from the proposed Project would not be significant.

3.2 Aquatic Resources

The PADEP classifies waterbodies according to water quality and aquatic communities. Under Pennsylvania Administrative Code (PAC) 25, Chapter 93 waterbodies in the state are classified as: coldwater fisheries, warmwater fisheries, migratory fisheries, and trout stocked. All waterbodies that would be crossed by the Project are freshwater. Of the 65 stream segments crossed by the Project, 43 streams are classified as coldwater fisheries and 22 are classified as warmwater fisheries; none are classified specifically for migratory fisheries or trout stocking (PAC 2012). A list of waterbodies crossed by the proposed Project is provided in appendix F. In Pennsylvania, warmwater fisheries are designated for the maintenance and propagation of fish species and additional flora and fauna, which are indigenous to a warmwater habitat. Coldwater fisheries are designated for the maintenance or propagation, or both, of fish species, including the family Salmonidae, and other flora and fauna indigenous to coldwater habitats (PAC 2012). Waterbodies supporting commercial fisheries are not known to be crossed by the Project and were not identified in consultation with the PFBC.

Fisheries of Special Concern

In addition to the general PADEP classifications, selected waterbodies are further classified as High-Quality or Exceptional Value and given special protection (PAC 2012); no waterbodies crossed by the proposed Project have been designated as High Quality or Exceptional Value. The PFBC further classifies waterbodies supporting trout populations or providing habitat as Approved Trout Waters, Class A Trout Waters, Special Regulation Areas, Stream Sections that Support Natural Reproduction of Trout, and Wilderness Trout Streams. The proposed Project would cross two PFBC-designated Approved Trout Waters, including Cherry Run (MP 6.9 and ATWS-83) and Blacklegs Creek (MP 18.4) (PFBC 2015a). No additional PFBC-designated fisheries of concern would be affected (PFBC 2015a, 2015b, 2015c, 2015d). According to the National Marine Fisheries Services online essential fish habitat mapper, no essential fish habitats are located in the Project area (NMFS 2015).

General Impacts and Mitigation

Construction of the pipeline facilities would require 65 waterbody crossings (including waterbodies located within ATWS or groundbeds and those crossed by access roads), of which 26 are classified as perennial, 23 as intermittent, and 16 as ephemeral. In addition, one pond is located within the construction workspace for the Replacement Segment that would be avoided by construction and two waterbodies (one pond and one ephemeral stream) are crossed by the Existing Segment but are not within construction workspace for the Replacement Segment. Of the 65 waterbody crossings, 22 are specifically classified as warmwater fisheries and 43 are classified as coldwater fisheries (PAC 2012). Waterbody crossing methods are described in detail in section A.6.2 and listed in appendix F.

To minimize impacts from sedimentation and turbidity in streams crossed by the proposed pipeline, Equitrans is proposing to construct the pipeline in waterbodies where water is flowing at the time of construction using dry-ditch methods (dam-and-pump or flume). In addition, ten streams would be crossed by HDD and two would be crossed by bore (see appendix F). In-stream blasting is not anticipated to occur (see section B.1.1). In accordance with FERC

requirements for warmwater fisheries, all in-water work would be conducted between June 1 and November 30. There are no warmwater time-of-year crossing restrictions from the PFBC. Equitrans would complete all in-water work in coldwater fisheries to adhere to FERC coldwater fishery construction window. PFBC restricts in-stream activities in Approved Trout Waters from March 1 through June 15; therefore, Equitrans would cross Approved Trout Waters between June 16 and February 28 (see appendix F).

While dry-ditch crossing methods would reduce turbidity and downstream sedimentation during construction, minor aquatic habitat alteration could still occur. Temporary impediments, changes to behavior, temporary loss of habitat, and/or the alteration of water quality could increase the stress rates, injury, and/or mortality experienced by fish.

Equitrans' use of the HDD and bore crossing methods would avoid direct impacts on fisheries during construction at Huskins Run, Crooked Creek, Nesbit Run, Blacklegs Run, Marshall Run, and multiple unnamed tributaries (see appendix F). However, if an inadvertent release of HDD drilling fluid occurs within a waterbody, the resulting turbidity could impact water quality and impede fish movement, potentially increasing the rates of stress, injury, and/or mortality experienced by fishes. In addition, water quality could be adversely affected by an accidental spill of hazardous material into a waterbody. Equitrans' adherence to the Procedures, and its HDD Contingency Plan and SPCC Plan would minimize the potential for these impacts, as well as the response time for notification and clean-up, should an inadvertent release or spill occur. Specific measures to minimize impacts on waterbodies, and the fisheries they contain, are discussed in section B.2.2. Waterbodies located within construction workspace that would not be crossed by the pipeline would be crossed using timber matting, a culvert, or a span mat bridge and would be protected by erosion controls in accordance with the Procedures.

Use of temporary and permanent access roads and equipment crossings would require seven waterbody crossings, which would be completed by installing clear span bridges and/or culverts. Equitrans' adherence to the Procedures would mitigate potential impacts from temporary use of access road crossings. One waterbody, Whisky Run, is located within the area of the existing Beagle Club Road groundbed. Equitrans would cross it using a span or mat bridge and protect the waterbody using erosion and sediment controls per the Procedures. No other waterbodies would be affected by construction or operation of aboveground facilities.

To minimize impacts on waterbodies and fisheries, Equitrans would maintain a 25-foot-wide riparian strip for the full width of the permanent right-of-way and limit vegetative maintenance immediately adjacent to waterbodies to a 10-foot-wide strip centered over the pipeline with selective tree-clearing within 15 feet of the pipeline.

Water withdrawals for hydrostatic testing would be from municipal sources, thereby avoiding impacts on fisheries (see section B.2.2). To further minimize impacts on fisheries and aquatic resources, Equitrans would implement the following measures from the Procedures, including:

- installing and maintaining erosion control devices;
- ensuring all flow downstream of crossings are appropriately maintained;

- adhering to in-stream construction time-frames specified by FERC and the PFBC;
- preventing and responding to equipment fluid spills by following the SPCC Plan;
- implementing the HDD Contingency Plan in case of inadvertent returns during HDD drilling activities;
- restoring streambeds and banks to pre-construction conditions; and
- regulating water discharges to prevent streambed scour.

Impacts on aquatic resources from construction and operation of the Project would be temporary and Equitrans would limit impacts on aquatic resources by implementing our Procedures and using HDD and dry-ditch waterbody crossing methods. Therefore, we conclude that impacts on aquatic resources from the Project would not be significant.

3.3 Wildlife Resources

Wildlife habitat types are based on the vegetation types in the TP-371 Project area and include forested uplands, open lands, agricultural lands, and wetlands. Vegetation types are described in detail in section B.3.1. Forested upland habitat in the proposed Project area is primarily composed of early successional deciduous forest or mixed early successional deciduous forest that provides food, cover, and nesting habitat for a variety of wildlife species, including mammals such as opossum, masked shrew, eastern chipmunk, coyote, raccoon, and white-tailed deer; reptiles and amphibians such as eastern box turtle, and red-backed salamander; and birds such as the wild turkey, wood thrush, ruffed grouse, ovenbird, Baltimore oriole, and Acadian flycatcher (Pennsylvania Natural Heritage Program [PNHP] 2015).

Open lands consist of scrub-shrub areas and open fields. Open upland habitat is primarily comprised of grasses, herbs, and shrubs and, depending on vegetative development, provides food, cover, and nesting habitat for a variety of wildlife species. Species common to open uplands include mammals such as opossum, masked shrew, eastern cottontail, coyote, and whitetail deer; and birds such as sparrows, warblers, hawks, and other raptors (PNHP 2015). Species that use open lands may also occur in agricultural lands, which provide foraging and resting habitat for numerous habitat generalists.

Three different types of wetland habitat occur in the Project area: forested, scrub-shrub, and emergent wetlands. Wetland habitat types are described in detail in section B.2.3. PFO wetlands are dominated by hardwoods that provide food, cover, and nesting habitat for mammals such as beaver, raccoon, mink, wild boar, and white-tail deer; reptiles and amphibians such as common ribbonsnake, eastern ratsnake, and wood frog; and birds such as great blue heron, wild turkey, and wood duck (PNHP 2015). PSS wetlands consist of low and compact vegetation dominated by shrubs, which supports a variety of bird species including the swamp sparrow and yellow warbler, as well as reptile and amphibian species such as the common watersnake, red-spotted newt, and pickerel frog (PNHP 2015). PEM wetlands are dominated by grasses, sedges, and rushes and provide habitat for mammals such as eastern harvest mouse, meadow vole, southern bog lemming, meadow jumping mouse, and whitetail deer; reptiles and amphibians

such as bullfrog, common ribbonsnake, and snapping turtle; and waterfowl such as heron, wrens, the red-winged blackbird, and ducks (PNHP 2015).

Migratory Birds

Migratory birds are species that nest in the United States and Canada during the summer and then migrate to and from tropical regions of Mexico, Central and South America, and the Caribbean for the non-breeding season. Migratory birds are protected under the Migratory Bird Treaty Act ([MBTA] – 16 U.S Code 703-711) and Bald and Golden Eagles are additionally protected under the Bald and Golden Eagle Protection Act ([BGEPA] – 16 U.S Code 668-668d). Executive Order 13186 (66 FR 3853) directs federal agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations and to avoid or minimize adverse impacts on migratory birds through enhanced collaboration with the FWS.

Executive Order 13186 was issued, in part, to ensure that environmental analyses of federal actions assess the impacts of these actions/plans on migratory birds. It also states that emphasis should be placed on species of concern, priority habitats, and key risk factors, and it prohibits the take of any migratory bird without authorization from the FWS. On March 30, 2011, the FWS and the Commission entered into a Memorandum of Understanding (MOU) that focuses on avoiding or minimizing adverse impacts on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the Commission and the FWS. This voluntary MOU does not waive legal requirements under the MBTA, the Endangered Species Act (ESA), the NGA, or any other statutes and does not authorize the take of migratory birds. The entire TP-371 Project would be within Region 28 (Appalachian Mountains) of the North American Bird Conservation Initiative. In total, 234 migratory bird species occur within Region 28 (Appalachian Mountains Bird Conservation Region Partnership 2005).

Managed and Sensitive Wildlife Areas

The FWS, PDCNR, Pennsylvania Game Commission (PGC), and PFBC were consulted to identify managed or sensitive wildlife habitats in the vicinity of the proposed Project (FWS 2015a, PDCNR 2015f, PGC 2015, PFBC 2015e). Agency consultation and review of Pennsylvania geographic information system databases identified no state wildlife management areas or existing or proposed National Wildlife Refuges that would be crossed by the Project. The closest state land (State Game Land Number 328) is 4.2 miles from the Project area and is owned by the PGC. A COE-managed easement within Crooked Creek (MP 10.9) would also be crossed by HDD, as discussed in section B.5.4.

General Impacts and Mitigation

Construction and operation of the Project would result in various short- and long-term impacts on wildlife. Impacts would vary depending on the specific habitat requirements of the species in the area and the vegetative land cover crossed by the proposed pipeline right-of-way. Potential short-term impacts on wildlife include the displacement of individuals from construction areas and adjacent habitats and the direct mortality of small, less mobile mammals, reptiles and amphibians that are unable to leave the construction area. Long-term impacts would

include permanent conversion of forested or scrub-shrub habitats to cleared and maintained right-of-way, and periodic disturbance of wildlife during operation and maintenance. Altered habitat and periodic disturbance could also increase wildlife mortality, injury, and stress.

Blasting is not currently anticipated on the proposed Project. In the event that blasting becomes necessary for construction, Equitrans would prepare a Blasting Plan that would outline general requirements, restrictions, and safety measures and standards that would be implemented by Equitrans or its blasting contractor. If blasting were required, wildlife close to the blast could be injured or killed; however, the preparation of rock for blasting, such as drilling shot holes and the movement of machinery and people, would likely cause enough disturbances to displace most wildlife from the immediate vicinity prior to the blast.

In total, construction of the proposed pipeline, including ATWS, groundbeds, laydown yards, and access roads would impact 45.3 acres of agricultural land, 79.5 acres of upland forest, 131.9 acres of open land, and 3.5 acres of wetlands (see table B-9). During operation, 19.3 acres of agricultural land, 13.6 acres of upland forest, 78.6 acres of open land, and less than 0.1 acre of wetlands within the permanent pipeline right-of-way would be maintained as open land. Groundbeds would result in maintenance of 0.6 acre of upland forest and 0.5 acre of open land. Additionally, 0.1 acre of agricultural land and less than 0.1 acre of emergent wetlands would be permanently converted to developed land at access road locations. Laydown yards proposed for use are listed in table A-4, ATWS are listed in appendix B, and access roads are listed in appendix D.

Fragmentation of forested areas results in changes in vegetation (for example, invasion of shrubs along the forest edge) which may limit the movement of species between adjacent forest blocks, increase predation, and decrease reproductive success for some species (Rosenberg et al. 1999). However, approximately 95 percent of the Project would be constructed on or adjacent to existing pipeline right-of-way, thereby minimizing additional habitat fragmentation to a few very small areas. In addition, the proposed permanent right-of-way would be maintained as 50 feet wide, as opposed to the 60-foot-wide permanent right-of-way for the Existing Segment. Forest fragmentation and edge effects are further described in section B.3.1.

Equitrans proposes to use 34 existing access roads, as well as 13 new access roads, including 41 temporary and 6 permanent access roads during construction of the pipeline facilities (see appendix D). The new permanent access roads would be placed primarily in commercial/industrial land, but would permanently affect about 0.1 acre of wildlife habitat (agricultural land and emergent wetland).

Equitrans would implement impact minimization measures as described in the FERC Plan and Procedures. These measures would include:

- minimizing vegetative clearing through constructing on or adjacent to existing pipeline right-of-way (approximately 95 percent of the route);
- revegetating the right-of-way, where applicable, with seed mixes developed in consultation with the USDA-NRCS Kittanning Field Office and the Armstrong and Indiana County Conservation Districts; and

- not conducting vegetation maintenance over the full width of the permanent right-of-way in wetlands and maintaining a 25-foot-wide buffer of native vegetation along the edge waterbodies.

Although individual mortality of some wildlife species could occur as a result of the proposed Project, the effects of these individual losses on wildlife populations would primarily be temporary and minor. Based on the construction within and/ or adjacent to the existing right-of-way, the presence of similar habitats adjacent to and in the vicinity of construction activities, and the implementation of impact avoidance and minimization measures, we conclude that construction and operation of the TP-371 Project would not have population-level impacts or significantly measurable negative impacts on wildlife.

The primary concern for impacts on migratory birds is mortality of eggs and/or young as mature birds could avoid active construction. Tree clearing and ground disturbing activities could cause disturbance during critical breeding and nesting periods, potentially resulting in the loss of nests, eggs, or young. In addition, forest fragmentation could increase predation, competition, and reduce nesting and mating habitat for migratory and ground-nesting birds (Faaborg et al. 1995). Equitrans has proposed a pipeline route that would minimize impacts on migratory birds by collocating approximately 95 percent of the Replacement Segment with the permanent right-of-way for the Existing Segment and also minimizing fragmentation impacts on some species of migratory birds.

Equitrans has developed a Migratory Bird Conservation Plan to evaluate the bird species present in the proposed Project area and to assess risks to those species. The FWS concurred with Equitrans' Migratory Bird Conservation Plan on August 19, 2015, and recommended use of native plants during revegetation; Equitrans has consulted with the USDA–NRCS and local soil conservation districts to develop appropriate seed mixes for use during restoration. Although multiple bird species are noted as occurring in the Project area, no federally or state listed threatened or endangered species are known to occur in the area. To minimize risks to migratory birds in general, Equitrans plans to clear trees in March 2016, which is within the FWS-recommended clearing window to protect nesting migratory birds (November 15 through March 31). However, we believe adherence to a March 2016 clearing schedule is unlikely given the status of the Commission's review process. If Equitrans cannot clear trees prior to April 1, further consultation with the FWS would be necessary; therefore**, we recommend that**:

- **<u>Equitrans should not clear trees</u> between April 1 and November 14 <u>until</u>:**

    a. Equitrans has completed additional consultation with the FWS concerning the avoidance, minimization, and mitigation of impacts on migratory birds, and has filed documentation of this consultation with the Secretary; and

    b. Equitrans has received written notification from the Director of OEP that construction or use of mitigation may begin.

During operations, Equitrans would prohibit all vegetative maintenance activities from April 1 through November 14 to minimize disturbance during migratory bird critical nesting periods.

An active bald eagle nest with fledglings was located during the May 2015 surveys within the Project area. Bald eagles are federally protected under the BGEPA; therefore, in accordance with the National Bald Eagle Management Guidelines, Equitrans would restrict construction within a 660-foot buffer of the nest to avoid disturbance of bald eagles and their young (FWS 2007a), and no construction would be permitted within the buffer between January 1 and July 31. A non-purposeful take permit may be required if buffer restrictions could not be implemented, depending on the nature of ongoing activity within the buffer and time of year. Potential noise impacts from HDD construction in the vicinity of the bald eagle nest are discussed in section B.8.2.

Although no additional records of bald eagle nests were identified within 0.5 mile of the Project location during Equitrans' consultation with the FWS, bald eagles may establish new nests over time. To ensure that FWS guidelines would be implemented if a newly encountered bald eagle nest were identified in the Project area, **we recommend that:**

- **Equitrans should restrict all Project activities within 660 feet of any newly encountered bald eagle nests. If Project activities are required within this buffer zone, Equitrans should first consult with the FWS to determine recommended guidelines and permit requirements, and file with the Secretary documentation of its additional consultation with the FWS for review and written approval by the Director of OEP.**

Based on the characteristics and habitat requirements of wildlife and migratory birds known to occur in the proposed Project area, the amount of similar habitat adjacent to and in the vicinity of the Project, adherence to our recommendation for bald eagles and migratory birds, and Equitrans' implementation of the measures in the Plan and Procedures, timing restrictions for vegetation maintenance, we conclude that construction and operation of the TP-371 Project would not have significant impacts on migratory bird populations.

2. Threatened and Endangered Species

Special status species are those species for which state or federal agencies afford an additional level of protection by law, regulation, or policy. Special status species include federally listed species protected under the ESA, as amended, species proposed or candidates for listing by the FWS, and those species that are state listed as threatened, endangered, or other special status. Section 7(a)(2) of the ESA requires the Commission to ensure that any action it authorizes, funds, or carries out would not jeopardize the continued existence of federally listed species, or result in the adverse modification or destruction of critical habitat for federally listed species. As the lead federal agency for the TP-371 Project, FERC is responsible for the Section 7 consultation process with the FWS. Species classified as candidate for listing under the ESA and/or state regulations do not currently carry regulatory protection; however, because they may be listed in the future, they are discussed herein, if identified by the applicable agency.

Informal consultations were conducted by Equitrans, as our non-federal representative, with the FWS - Pennsylvania field office to determine whether any federally listed threatened or endangered species, federal species of concern, or designated critical habitats occur in the Project area to comply with the requirements of the ESA. Table B-10 describes the federally listed species that may occur in the Project area, their preferred habitat, and our determination of effect. No designated critical habitat occurs in the Project area (FWS 2015a). Equitrans also consulted with the PDCNR, PGC, and PFBC regarding state listed species and habitats.

Equitrans' initial search of the Pennsylvania Natural Diversity Inventory indicated the presence of two state-listed threatened or endangered species in Indiana County (the threatened Allegheny woodrat [*Neotoma magister*] and the threatened thick-leaved meadow rue [*Thalictrum coriaceum]*), but no state-listed species in Armstrong or Westmoreland Counties. As further research by Equitrans indicated that these species were not in the Project area, and later consultation with the applicable agencies did not indicate these species to be of concern, they have not been further assessed. The PDCNR and PGC have both indicated that no species occurrences or resources of concern under their jurisdiction occur within the vicinity of the proposed Project and have stated that no further coordination is needed with their offices unless changes to the Project are proposed. PFBC has indicated that one candidate species, the least brook lamprey (*Lampetra aepyptera*) has a record of occurrence in the proposed Project area, but that no adverse effect on that species would be anticipated. Therefore, the least brook lamprey is not further assessed.

4.1 Mammals

Indiana Bat

The federally and state listed endangered Indiana bat (*Myotis sodalis*) was identified during consultations with the FWS – Pennsylvania Field Office as having a range in the vicinity of the proposed Project. Equitrans conducted a summer mist net and radio telemetry survey for bats in the Project area in July, 2015 in accordance with the *2015 Indiana Bat Summer Survey Guidelines – April 2015* (FWS 2015d). No Indiana bats were captured during the survey, and on November 12, 2015 the FWS determined that tree clearing associated with the Project is *not likely to adversely affect* the Indiana bat; we concur with this determination.

Northern Long-Eared Bat

The northern long-eared bat (*Myotis septentrionalis*) was federally listed as threatened under the ESA on May 4, 2015 due to population declines from white-nose syndrome. Consultations with the FWS indicated that the proposed Project is in an area known to be within the range of the northern long-eared bat (FWS 2015a). Project-related impacts on the species could include temporary impacts due to habitat disturbance during construction activities. Long-term impacts could occur due to the permanent loss of suitable habitat from vegetation clearing for construction and operation.

Table B-10
Federal and State Threatened and Endangered Species and Species of Concern Potentially Occurring in the Project Area

Species	Federal Status[a]	State Status (PA)[a]	Habitat Description	Effect Determination
Mammals				
Indiana bat (*Myotis sodalis)*	E	PE	Hibernates in caves and abandoned mines during the winter. Roosts in maternity colonies in the summer (May – August) located under the exfoliating bark of dead trees in riparian zones, bottomland and floodplain habitats, wooded wetlands, and upland communities. Forages in semi-open forested habitats, forest edges, and riparian areas.	*Not likely to adversely affect;* no individuals were identified during field surveys and tree clearing for the Project is not likely to adversely affect the species.
Northern long-eared bat (*Myotis septentrionalis*)	T	--	Hibernates in caves and abandoned mines during the winter. Occupies hardwood forested areas for roosting and foraging during the summer. Roosts singly or in colonies underneath exfoliating bark of dead trees, in cavities, or in crevices of both living and dead trees. Occasionally found using structures as roost sites (for example, barns and sheds). Forages within the understories of forested hillsides and ridges.	*Not likely to adversely affect;* a portion of the Project is located within the range of this species. Equitrans is proposing to avoid impacts on the species by conducting tree clearing between November 15 and March 31 when the bats are hibernating or concentrated near their hibernacula.
Mussels				
Clubshell (*Pleurobema clava*)	E	PE	Inhabits small to medium rivers and streams in areas of clean, loose sand and gravel. They will bury themselves in the bottom substrate to depths of up to four inches. Larvae will attach themselves to the gills of a host fish until they have shells of their own, they will then detach and settle into the streambed.	*No effect.* Waterbodies within the current distribution would not be crossed by the Project.
Northern riffleshell (*Epioblasma torulosa rangiana*)	E	PE	Inhabits small to large streams and buries itself in firmly packed sand or gravel substrates. Requires a stable, undisturbed habitat with a sufficient population of host fish to reproduce and complete the mussel's larval development.	*No effect.* Waterbodies within the current distribution would not be crossed by the Project.

Table B-10 (Continued)
Federal and State Threatened and Endangered Species and Species of Concern Potentially Occurring in the Project Area

Species	Federal Status[a]	State Status (PA)[a]	Habitat Description	Effect Determination
Mussels (Continued)				
Rabbitsfoot (*Quadrula cylindrica cylindrica*)	T	--	Prefers shallow areas with sand and gravel along the bank and next to shoals. Glochidia use minnows for several weeks before becoming young mussels and settling on the stream bottom.	*No effect.* Waterbodies within the current distribution would not be crossed by the Project.
Rayed bean (*Villosa fabalis*)	E	PE	Lives in smaller, headwater creeks, but is sometimes found in large rivers. Often it is found in and around roots of aquatic vegetation and prefers gravel or sand substrates. Larvae will attach themselves to the gills of a host fish until they have shells of their own, they will then detach and settle into the streambed.	*No effect.* Waterbodies within the current distribution would not be crossed by the Project.
Sheepnose (*Plethobasus cyphyus*)	E	PT	Found in larger, fresh waterbodies characterized by shallow depths and moderate to rapid currents with coarse sand and gravel substrates. They may also occur in areas of cobble, mud, and boulder substrate and in deep runs in large rivers. Glochidia are released in late summer.	*No effect.* Waterbodies within the current distribution would not be crossed by the Project.
Snuffbox (*Epioblasma triquertra*)	E	PE	Found in small to medium freshwater creeks, as well as in some waterbodies such as lakes and rivers, in areas with a swift current. Inhabits areas of sand, gravel, or cobble substrate. Females brood glochidia larvae for up to 7 months before releasing them.	*No effect.* Waterbodies within the current distribution would not be crossed by the Project.

Sources: FWS 1993, 1997a-b, 2007b, 2012a-d, 2014a-b, 2015b-c.

[a] E = endangered; T = threatened; PE = Pennsylvania endangered; and PT = Pennsylvania threatened.

As discussed for the Indiana bat, Equitrans conducted a summer mist net and radio telemetry survey for bats in the Project area. Thirteen northern long-eared bats were captured during the survey; of those, four were radio-tracked and three roost sites were identified. On November 12, 2015 the FWS recommended that Equitrans avoid clearing within a three-mile buffer around capture locations and a 1.5-mile buffer around roost sites between March 31 and October 1.

To avoid impacts on nesting migratory birds, Equitrans would adhere to the FWS–Pennsylvania Field Office recommendation to conduct all timber removal between November 15 and March 31, which includes the period when the bats are migrating back to their hibernacula and swarming areas. In the letter issued November 12, 2015, the FWS stated, and we agree, that the proposed Project is *not likely to adversely affect* the northern long-eared bats if tree-clearing occurs between October 1 and March 31 (FWS 2015d). If Equitrans cannot complete tree-clearing between October 1 and March 31, further consultation with the FWS would be necessary; therefore, **we recommend that:**

- **Equitrans should not clear trees between April 1 and September 30 until:**

    a. **staff completes additional consultation with the FWS regarding the northern long-eared bat; and**

    b. **Equitrans has received written notification from the Director of OEP that construction or use of mitigation may begin.**

4.2 Mussels

Although listed mussels may occur within Armstrong County, they are not known to occur in waterbodies crossed by the proposed Project (FWS 1993, 1997a, 1997b, 2012a-d, 2014a, 2014b, 2015c). In addition, the FWS did not indicate the presence of listed mussels within the Project area in its correspondence with Equitrans and the listed mussel species. As mussels aren't known to occur in potentially affected waterbodies, the proposed Project would have no effect on native freshwater mussels.

Equitrans has completed consultation with the PDCNR, PGC, and PFBC regarding state-listed threatened and endangered species that may be present in the Project area. The FWS determined on November 12, 2015 that the Project would not be likely to adversely affect listed bats, and we have determined that the Project would have no effect on federally listed mussels; therefore, Section 7 consultation under the ESA is complete. If timber removal timeframes are altered, our recommendation above would ensure ESA consultations are reinitiated.

7. Water Resources and Wetlands

5.1 Land Use

The proposed pipeline would cross multiple land types in Armstrong and Indiana Counties, Pennsylvania. In addition, one laydown yard is proposed in Westmoreland County. The majority of land crossed by the proposed Project is classified as either forested land or open

land. Other land uses include agricultural land, open water, commercial/industrial, and residential.

To reduce the area of affected land, Equitrans plans to collocate approximately 95 percent of the proposed Replacement Segment with the Existing Segment. The TP-371 Project would affect 316.0 acres of land during construction, including pipeline construction right-of-way, ATWS, laydown yards, access roads, and ancillary facilities including groundbeds, valves, and taps. Of the 316.0 acres, approximately 198.5 acres would be restored to pre-construction uses. The remaining 117.5 acres would be maintained for operation of the proposed Project. Of the 316.0 acres proposed for construction of the Project, 114.3 acres are within Equitrans' existing maintained pipeline right-of-way (36 percent). Of the 117.5 acres that would be maintained for the life of the Project, 90.3 acres (77 percent) are within Equitrans' existing maintained right-of-way. Table B-11 summarizes the Project's temporary (construction) and permanent (operational) land use impacts. Abandonment activities would occur within the cleared construction right-of-way for the Replacement Segment, after it has been placed into operations.

Agricultural Land

Construction of the proposed Project would impact 45.3 acres of agricultural land, which is defined by the presence of active crop production. During the construction phase of the proposed pipeline, it is anticipated that one growing season would be lost; however, landowners would be compensated for these production losses in accordance with the terms of individual landowner agreements.

Operations would require 19.4 acres of agricultural land, of which 81 percent would be within the existing permanent right-of-way). This area would include 19.3 acres of agricultural land within the proposed permanent pipeline right-of-way and 0.1 acre that would be permanently encumbered by an access road. The 19.3 acres within the permanent right-of-way would be restored in accordance with FERC's Plan following construction so that the full right-of-way could be used for crop production the following season. The remaining 0.1 acre would be permanently lost and converted to industrial land. Details regarding construction techniques within active croplands are provided in section A.6.2.

Prime, unique, or locally important farmland constitutes approximately 45.4 percent of land potentially affected by the Project. These land categories are assigned based on soil composition and are not necessarily currently used for agricultural purposes. Impacts on prime farmland or farmland of statewide or local importance are discussed in section B.1.2.

Equitrans is unaware of any irrigation or drainage systems that would be crossed; however, the presence or absence of these systems would be verified during the land acquisition process. If present within the right-of-way, Equitrans would develop a set of specific mitigation measures with the landowner prior to beginning construction. Work in proximity to these systems would be conducted in accordance with the FERC Plan. Overall impacts on agricultural lands would be minor and temporary.

Table B-11
Land Use Affected by Construction and Operation of the TP-371 Project [a]

Facility	Agricultural		Forested		Open Land		Residential		Industrial/ Commercial		Open Water		Total	
	Con[b]	Op[b]	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op
Pipeline Facilities														
Pipeline Right-of-way and ATWS	44.9	19.3	76.0	13.6	120.4	78.6	1.0	0.5	15.9	3.1	0.0	0.0	258.2	115.1
Groundbeds	0.0	0.0	0.6	0.6	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1
Access Roads	0.4	0.1	2.9	0.0	0.9	<0.1	0.0	0.0	25.4	1.2	0.0	0.0	29.6	1.3
Laydown Yards	0.0	0.0	0.0	0.0	13.6	0.0	0.0	0.0	13.5	0.0	0.0	0.0	27.1	0.0
Project Total[c]	**45.3**	**19.4**	**79.5**	**14.2**	**135.4**	**79.1**	**1.0**	**0.5**	**54.8**	**4.3**	**0.0**	**0.0**	**316.0**	**117.5**

[a] All numbers are reported in acreages. Includes combined acreage totals in Armstrong, Indiana, and Westmoreland Counties, where applicable.

[b] Con = Construction; Op = Operation.

[c] Construction impact acreages are based on a 100-foot-wide right-of-way in uplands and a 75-foot-wide right-of-way in wetlands. Operational impact acreages are based on a 50-foot-wide permanent right-of-way. Acreages include valves and taps since they would be located within the permanent right-of-way.

Forested Land

Forested land is defined by upland or wetland areas dominated by hardwood forests or a combination of hardwood and evergreen forest. A total of 25 percent of the land that would be affected by construction of the Project (79.5 acres) is classified as forested land (see table B-11). Operation of the proposed Project would result in the permanent conversion of total of 14.2 acres of forested land. Of this area, 13.6 acres of forested land would be converted to open land within the permanent right-of-way and 0.6 acre would be converted to open land for the proposed Walnut Road groundbed (MP 1.7).

After construction, trees and shrubs would be allowed to grow within the temporary construction right-of-way and other temporary workspace areas. Routine maintenance of the permanent right-of-way would be conducted between November 15 and March 31 in accordance with the FWS guidance. In general, upland vegetation would be mowed and/or cut approximately once every three years; routine clearing of the full right-of-way would not occur in wetlands, but trees within 15 feet of the pipeline could be selectively cleared. To discourage the establishment of trees and woody plants with deep root systems from forming on top of the pipeline, more frequent maintenance may occur within five feet of the pipeline centerline in uplands and wetlands. Impacts on forested lands would be long-term and permanent, as it would likely take 20 years or more for mature trees to re-establish within the construction areas; the 14.2 acres required for operation would be permanently converted to open or developed land. Impacts on forested vegetation are discussed in greater detail in section B.3.1 and visual impacts from clearing forested land are discussed in section B.5.5.

Open Land

Project construction would affect 135.4 acres of open land, defined as non-forested upland or wetland open areas, scrub-shrub land, open fields not under cultivation, prairies, grasslands, maintained roadsides, and utility rights-of-way (see table B-11). By design, between 50 and 58 feet of the Existing Segment's 60-foot right-of-way, classified as open land, would be used as temporary construction workspace for the proposed pipeline route. A total of 91.7 acres (68 percent) of the open land used for construction would be within Equitrans' existing right-of-way. Approximately 56.3 acres would be temporarily disturbed for construction and allowed to revert to natural conditions after construction, including a 20-foot width of the existing right-of-way. During operation, 78.6 acres would be within the new maintained right-of-way of which 72.5 acres are already maintained as Equitrans' existing right-of-way.

When collocated, 40 feet (approximately 78 percent) of the 50-foot-wide proposed permanent right-of-way would be located within the existing 60-foot-wide right-of-way, which is presently maintained as non-forested land. A total of 79.1 acres of open land would be permanently impacted by the Project, including 78.6 acres that would be maintained in an herbaceous state along the 50-foot-wide right-of-way, less than 0.1 acre of herbaceous wetland that would be converted to developed land for a proposed access road, and 0.5 acre that would be converted maintained as the existing Beagle Club Road groundbed (MP 14.2). Based on the limited acreage of open land subject to permanent maintenance or conversion, impacts on open land would be predominantly short term and minor.

Industrial/Commercial

Industrial/commercial lands include existing industrial plants, commercial facilities, mines, and existing roads. As presented above in table B-11, the proposed TP-371 Project would affect a total of 54.8 acres of industrial/commercial land during construction, which is about 17 percent of all land that would be affected by the Project. With the exception of 4.3 acres of industrial/commercial land that would be permanently encumbered by the operational right-of-way and permanent access roads, the remaining 50.5 acres of affected land would be returned to original conditions after construction.

The proposed Project would have temporary impacts on roads and railroads. The Norfolk Southern Railroad (MP 18.4) and most paved roads would be crossed via HDD or bore, thereby avoiding impacts. However, a total of seven asphalt and six gravel roads would be open-cut for construction of the proposed pipeline (see section A.6.2). Open-cut roadways would be restored to pre-construction conditions. Transportation impacts are discussed in section B.6.2. The majority of impacts on industrial/commercial land would be temporary and minor.

Open Water

For this Project, open water is defined as lakes, ponds, and waterbodies that are 100 feet wide or greater. Based on current Project mapping, no open water would be impacted by construction or operation of the Project. One open water pond would be within the Project construction workspace at MP 14.8. However, as discussed in section B.2.2, Equitrans would surround the pond with construction fencing and avoid direct impacts during construction.

Equitrans plans to use the HDD method to construct the proposed pipeline beneath Crooked Creek (MP 10.9), the only waterbody located along the proposed route that approaches 100 feet wide. Because the pipeline would be installed via HDD, no impacts on open water are anticipated from construction or operation of the proposed Project. Equitrans would cross other waterbodies using methods described in section A.6.2.

5.2 Residential Land and Planned Developments

Construction of the proposed pipeline would temporarily affect 1.0 acre of residential land, of which 0.5 acre would be encumbered by the permanent right-of-way during operations (see table B-11). Equitrans consulted with Cowanshannock, Plumcreek, South Bend, and Burrell townships in Armstrong County as well as the Planning and Development Department of Indiana County to identify any planned residential or commercial developments crossed by the Project or within 0.25 mile. Each of these entities indicated that there are no known planned residential or commercial developments were identified within 0.25 mile of the Project within Armstrong or Indiana Counties.

Temporary construction impacts on residential areas could include noise and dust; disturbance or removal of lawns, trees, landscaped shrubs, or similar vegetation; potential damage to existing septic systems or wells; and removal of aboveground structures such as fences or sheds from within the pipeline right-of-way. Equitrans would minimize construction-related impacts on all residences through landowner notification of approximate timelines of

active construction, maintained property access, mitigation of fugitive dust by wetting the ground surface, and installation of safety fence around an open ditch.

Five residences, each located in Armstrong County, are located within 50 feet of the proposed construction work areas, as presented in table B-12. One residence (MP 0.2) would be avoided by using the HDD method. Two residences (MP 5.0 and 6.0) would be located within a proposed ATWS and would be removed prior to construction; Equitrans has executed agreements with each these landowners. Two residences, located at MP 7.1 and 8.8, would be within 38 to 31 feet, respectively, from the construction workspace. At all residences within 50 feet of proposed workspace, Equitrans would install 100-foot-long barricade fences along the edges of the construction workspace, place end caps on exposed pipeline at the end of each work day, and backfill and restore landscapes in accordance with the FERC Plan.

Table B-12
Residences and Buildings Within 50 Feet of the TP-371 Project

County	Type of Structure	Nearest Proposed Milepost	Distance to Pipeline Centerline (feet)	Distance to Construction Workspace (feet)
Armstrong	Residence	0.2	71	46
Armstrong	Outbuilding (trailer)	2.8	58	33
Armstrong	Commercial building	4.7	186	18
Armstrong	Residence[a]	5.0	55	Within ATWS
Armstrong	Residence[a]	6.0	61	Within ATWS
Armstrong	Outbuilding (garage)	7.1	114	44
Armstrong	Residence	7.1	78	38
Armstrong	Outbuilding (shed)[a]	8.5	0	Within right-of-way
Armstrong	Residence	8.8	66	31
Armstrong	Outbuilding (shed)	8.8	63	34
Armstrong	Industrial[b]	10.5	135	Within ATWS
Armstrong	Industrial[b]	10.5	165	Within ATWS
Armstrong	Industrial[b]	10.5	151	13
Armstrong	Industrial[b]	10.5	167	2
Armstrong	Outbuilding (garage)	11.0	63	38
Armstrong	Outbuilding (shed)	12.8	36	0
Armstrong	Barn	12.8	59	23
Indiana	Industrial[b]	20.8	78	Within ATWS

[a] These buildings would be removed by Equitrans prior to construction.
[b] These buildings are associated with an existing third-party compressor station and would not be impacted.

In accordance with FERC's Plan, all residential areas would be restored to pre-construction conditions where possible or as specified by the landowners. Landowners would continue to have use of the permanent right-of-way within the bounds of the easement agreement. However, no permanent structures would be allowed within the limits of the proposed operational right-of-way.

5.3 Surface Mining Lands

According to a review of the files maintained by the PGDC (2015) and USGS topographic maps, the Project would cross four abandoned surface and underground mines and one abandoned mine spoil area (see table B-1). A total of one active surface coal mine was identified within a 0.25-mile radius of the proposed Project area; no active mines would be crossed. Mineral resources and mining in the Project area are discussed in section B.1.1.

5.4 Public Land, Recreation, and Special Interest Areas

The Project does not cross any public land or special interest areas such as national parks, forests, wildlife refuges, trails, or natural landmarks; state parks or forests; or federally designated wilderness areas. In addition, Equitrans has conducted title searches for any private easements enrolled in the USDA–NRCS Agricultural Conservation Easement Program and has determined that none would be crossed. Equitrans is also coordinating with the PDCNR to determine whether assets funded via the PDCNR recreation and conservation grant program occur in the Project vicinity; however, according to publicly available data no grant sites are located within 0.5 mile of the Project (PDCNR 2015g). Equitrans requested additional correspondence with PDCNR regarding granted lands in the Project vicinity, and would provide documentation of that correspondence when available.

The proposed Project would cross Crooked Creek (MP 10.9), which is managed by the COE as part of a flood control and reservoir project (the Crooked Creek Lake Recreation Area). Equitrans has indicated that the proposed HDD crossing of Crooked Creek requires a Submerged Land License Agreement from the PADEP, but does not require a crossing permit from COE. As shown in table A-8, Equitrans submitted the Submerged Land License Agreement to the PADEP. The Crooked Creek Lake Recreation Area, located approximately 5 miles to the west of the proposed Project, is used for common outdoor activities such as camping, hiking, horseback riding, boating, and fishing, but would not be affected by the construction or operation of the proposed Project (COE 2015a, 2015b). Recreational boating may occur within Crooked Creek; however, the waterbody would be crossed via HDD and therefore any impacts on recreational boating activity would be avoided. In addition, due to the rolling topography and forests in the area, we do not anticipate that the Project would cause visible impacts on from hiking, bike riding or horseback trails within the Crooked Creek Lake Recreation Area.

5.5 Visual Resources

The proposed Project could alter existing visual resources in two ways: (1) construction activity and equipment may temporarily alter the viewshed; and (2) lingering impacts along the right-of-way from clearing during construction could alter existing vegetation patterns. The significance of these visual impacts would primarily depend on the quality of the viewshed, the

degree of alteration of that view, the sensitivity or concern of potential viewers, and the perspective of the viewer.

Impacts would be greatest during construction of the proposed Project because of the increased right-of-way needed for construction, the displaced soil, and the presence of personnel and equipment. After construction, temporary workspaces would generally be returned to pre-construction conditions by the restoration methods discussed in the Plan and Procedures. Land affected by the proposed Project is dominated by forested land and open and agricultural land on rolling hills and steep terrain. Visual impacts would be most noticeable in areas of forested land where cleared vegetation would be more noticeable. The conversion of forested land to open land has the potential to impact its use as a visual buffer and reduce its aesthetic quality. In restored temporary work areas and on the abandoned pipeline right-of-way, regrowth to pre-construction condition would generally take 20 to 30 years for many species as forested areas in the project area are typically young forest.

However, some of the proposed pipeline route has been visible to the public since the 1950s and 1960s when the existing right-of-way was cut. With the exception of minor differences in the age and pattern of vegetation, the permanent right-of-way associated with the Replacement Segment would pose no new permanent visual impacts beyond those that resulted from the original 1950s construction and right-of-way maintenance.

No major aboveground facilities are proposed for the pipeline replacement Project. Therefore, no significant permanent visual impacts are anticipated. Through Equitrans' implementation of the revegetation measures in the Plan and Procedures, and its proposed construction and mitigation measures, we conclude that visual impacts of the entire proposed Project would be appropriately minimized and no significant impacts would result. The potential for visual impacts on cultural resources is discussed in section B.7.2.

7. Socioeconomics

The proposed Project would primarily impact Armstrong and Indiana Counties in Pennsylvania. In addition to replacing the existing pipeline, the Project would include the installation, abandonment, or replacement of ancillary facilities; no significant aboveground facilities would be constructed. Construction and operation of the Project would have minimal impacts on population, employment, transportation, or the local economy.

6.1 Employment

Based on the U.S. Bureau of Labor Statistics, the 2014 average unemployment rate for Pennsylvania was 5.8 percent, with unemployment rates of 6.4 percent in Armstrong County and 5.9 percent in Indiana County (U.S. Bureau of Labor Statistics 2015). Project construction would require an estimated peak workforce of 150 workers. Due to the relatively short duration and transient nature of construction, it is anticipated that most non-local workers would not be accompanied by their families. The influx of any non-local workers would be temporary and limited to the 8-month period of construction. The increase in employment for local workers would result in a temporary and negligible impact on unemployment rates in the proposed Project area.

Equitrans does not anticipate hiring new staff to operate the proposed pipeline facilities; existing Equitrans' staff members would fill this role. Therefore, no long-term increase in population and employment within the counties crossed by the Project would be expected.

6.2 Transportation

The Project would cross 1 railroad and 27 public roads. The Norfolk Southern Railroad (MP 18.4) would be crossed using the HDD method, thereby precluding impacts. Of the 27 public roads, 13 would be crossed open cut (including six gravel and seven asphalt roads), 8 would be bored, and 6 would be crossed using the HDD method (see table A-6). State roads would be crossed using the conventional bore method or the HDD method to avoid traffic impacts, with the exception of Mt. Union Church Road (State Road 2024), which would be crossed using the conventional open-cut technique.

Although direct impacts on roads crossed by bore or HDD would generally be avoided, roads crossed by open cut methods would be temporarily affected by construction within the roadway. To minimize impacts at open-cut road crossings, Equitrans would temporarily detour traffic and use appropriate signage. Where no reasonable detour is available, Equitrans would keep at least one lane of the road open to traffic except when closure is essential for pipeline installation and would avoid road closures during peak traffic periods. Equitrans would arrange a road closure schedule with the appropriate transportation authority, provide traffic warning signs, and would use flagmen to stop traffic during delivery of construction materials. Equitrans would typically complete open cut asphalt and gravel roadway crossings within two days and would restore roadways to pre-construction conditions.

In addition, roads in the Project area may experience increased traffic due to the movement of heavy equipment and personnel. Most construction personnel would travel to and from the Project area during off-peak traffic hours, which would help minimize impacts on transportation systems. Equitrans plans to schedule the delivery of oversize loads to minimize traffic impacts. To ensure public safety, Equitrans would use flagmen to stop traffic during delivery of construction materials and would maintain access for emergency vehicles at road crossings.

6.3 Housing

Construction of the TP-371 Project would require a peak workforce of about 150 workers along three separate construction spreads. The 2013 rental housing vacancy rates in the counties crossed by the proposed Project were 8.5 percent and 9.7 percent, respectively, in Armstrong and Indiana Counties, Pennsylvania (U.S. Census Bureau 2015). As of 2013, there were 8,784 vacant housing units in the counties crossed by the Project (U.S. Census Bureau 2015). In addition, there are about 41 hotels, motels, and bed and breakfasts within the two counties crossed by the proposed Project (HotelMotels 2015). Additionally, 11 recreation vehicle parks and campgrounds in Pennsylvania could be used by the workforce (RVParkStore 2015).

Based on the number of available rental units, hotels/motels, recreation vehicle parks, and campgrounds in the proposed Project area, it is anticipated that there would be sufficient housing available for the peak Project workforce, even if all workers were non-local. However, the

presence of the construction crews could cause a minor, temporary impact on the availability of hotels/motels in the Project area. No new workers would be hired for operation of the proposed Project. Therefore, the proposed Project is expected to have a negligible impact on housing in the Project area.

6.4 Property Values

The potential impact of a pipeline on the value of a tract of land is related to many tract-specific variables, including the size of the tract, the current value of the land, the utilities and services available or accessible, the current land use, and the value of adjacent properties. Land values are determined by appraisals that would take into account objective characteristics of the property such as size, location, and any improvements. However, subjective valuation is generally not considered in appraisals. The presence of a pipeline and the restrictions associated with a pipeline easement could influence a potential buyer's decision to purchase a property. If a buyer is looking for a property for a specific use that the presence of the pipeline renders infeasible, then the buyer may decide to purchase another property more suitable to their objectives. For example, a buyer wanting to develop the land for a commercial property with subsurface structures would likely not find the property suitable, but farmers looking for land for grazing or additional cropland could find it suitable for their needs. This would be similar to other buyer-specific preferences that not all homes have, such as close proximity to shopping or access to high quality school districts. We conclude the Project would have no significant impact on property values.

6.5 Tax Revenue

Based on Commonwealth of Pennsylvania tax law, Equitrans would only require taxes to be paid on lands that were purchased for placement of aboveground facilities, and not those lands simply encumbered by the pipeline easement. Based on the limited acreage affected by Equitrans' proposed aboveground facilities (see table A-2), the proposed Project would not result in a significant, direct increase in Commonwealth tax revenues. The predominant source of tax revenue flowing into the affected counties would therefore result from Commonwealth sales tax from the purchase of construction-related expenses and by the fuel, lodging, and food purchased by non-local construction workers.

7. Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires that the FERC take into account the effects of its undertakings (including issuing Certificates) on properties on, or those eligible for listing on, the National Register of Historic Places (NRHP), and afford the Advisory Council on Historic Preservation an opportunity to comment. Equitrans, as a non-federal party, is assisting the Commission in meeting these obligations under Section 106 and the implementing regulations at 36 CFR 800 by preparing the necessary information, analyses, and recommendations, as authorized by 36 CFR 800.2(a)(3).

7.1 Cultural Resource Investigations

Cultural resources investigations completed to date include background research and archaeological survey within the Project Area of Potential Effect (APE). An architectural survey

was not required by the State Historic Preservation Office (SHPO) in Pennsylvania, identified as the Pennsylvania Historical and Museum Commission and Bureau for Historic Preservation (PHMC BHP). All investigations were consistent with federal and state guidelines.

Background research indicated that two previously identified archaeological resources and one architectural resource have been documented within the Project APE. These include archaeological Sites 36AR0148 and 36AR0341 and the NRHP-eligible Buffalo, Rochester, & Pittsburgh Railroad, also known as the Norfolk Southern Railroad. Prior to beginning the archaeological survey, Equitrans agreed to avoid the historic-age railroad by constructing the pipeline using the HDD method at this location.

Equitrans has conducted an archaeological survey of 100 percent of all Project areas, including the pipeline right-of-way, extra workspaces, access roads, groundbeds, pigging facilities, valve sites, tie-in locations, and laydown yards to determine if construction activities associated with the TP-371 Project would have the potential to impact cultural resources.

The archaeological survey of the Project APE was conducted within a 300-foot-wide survey corridor over the proposed pipeline right-of-way, excluding the existing 60-foot-wide easement, which was previously surveyed. In addition, a 100-foot-wide corridor was used to survey proposed access roads.

7.2 Survey Results

Archaeological surveys included new field investigations and revisiting the locations of previously identified Sites 36AR0148 and 36AR0341; however, no evidence of either site was detected. Based on the negative findings at these locations, Equitrans recommended no further work near these previously recorded site locations.

Archaeological survey within the Project APE resulted in the identification of two newly identified archaeological sites; one pre-contact period site (36IN0460) and one historic period site (36AR0571) (see table B-13). Also identified were three pre-contact period isolated finds, and a historic period cemetery. Brief descriptions of the cultural resources identified within the Project APE are provided below. Information about each resource is also provided in table B-13.

The pre-contact period site (36IN0460) consists of three lithic flakes and is recommended as not eligible for the NRHP. The historic period site (36AR0571) consists of an historic stone foundation, multiple buried pieces of slate roof tile, and other pre-modern architectural materials. Due to the site's historic age and retention of integrity, it is recommended as potentially eligible for the NRHP. Equitrans plans to avoid the site and place safety fencing and signage around its boundary during construction. Since the proposed Project includes the construction of a pipeline that is below ground, no permanent visual impacts are anticipated once the right-of-way is restored after construction.

A portion of the Buffalo, Rochester & Pittsburg Railroad, also referred to as the Norfolk Southern Railroad, is located within the Project APE and is NRHP-eligible. The resource would be avoided by boring under the railroad, therefore, no effect is expected to this historic property.

Table B-13
Archaeological Resources Identified within the Project Area of Potential Effect

Site Number	Resource Type	NRHP Eligibility[a]/ Management Recommendation	PHMC BHP Comment/Date
Pipeline			
36IN0460	Pre-contact lithic scatter	Not eligible[a]/no further work	Concur/ August 12, 2015
36IN/039	Pre-contact isolated find	Not eligible[a]/no further work	Concur/ August 12, 2015
36AR/024	Pre-contact isolated find	Not eligible[a]/ no further work	Concur/ August 12, 2015
36AR/025	Pre-contact isolated find	Not eligible[a]/ no further work	Concur/ August 12, 2015
Buffalo, Rochester, and Pittsburgh Railroad	Historic structure	Determined eligible by PHMC BHP/no effect/avoidance	Concur/ August 12, 2015
Access Road			
36AR0571	Historic stone foundation and scatter	Potentially eligible[a/] no effect/avoidance	Concur/ August 12, 2015
ATWS			
Sowers Cemetery	Historic to modern cemetery	Not eligible[a]/no further work	Concur/ August 12, 2015

[a] Recommendation made under NRHP evaluation Criterion D: Information Potential.

The historic period Sowers Cemetery consists of 48 gravestones with interment dates ranging between 1859 and 1986. The cemetery does not meet any of the eligibility requirements of the NRHP. Equitrans would install safety fencing around the cemetery boundary to avoid surface impacts on the area known to contain burials, although unmarked graves may be present outside of the cemetery boundary. No subsurface impacts are planned within or near the limits of the cemetery; therefore, no graves would be disturbed by construction of the proposed Project. Based on this information, Equitrans recommends no further work at the cemetery.

Equitrans provided the archaeology survey report and supplemental survey reports to FERC and the PHMC BHP on June 30, 2015, October 2, 2015, and December 18, 2015, respectively. In return correspondence dated August 12, 2015, November 3, 2015 and December 23, 2015, the PHMC BHP concurred with the recommendations of each report and agreed that no further cultural resources investigations are warranted for the proposed TP-371 Project.

7.3 Native American Consultation

Equitrans provided Project information to the following 15 federally-recognized Native American tribes: Absentee-Shawnee Tribe of Oklahoma, Cayuga Nation, Delaware Nation, Delaware Tribe of Indians, Eastern Shawnee Tribe of Oklahoma, Oneida Indian Nation, Oneida Nation of Wisconsin, Onondaga Indian Nation, Seneca Nation of Indians, Seneca-Cayuga Tribe

of Oklahoma, St. Regis Mohawk Tribe, Shawnee Tribe of Oklahoma, Stockbridge-Munsee Band of the Mohican Nation in Wisconsin, Tonawanda Seneca Nation, and the Tuscarora Nation.

Equitrans received a response from the Delaware Tribe of Indians, who agreed to participate as a consulting party, and requested the completion of a survey of the Project APE. As requested, Equitrans provided a copy of the survey report to the Delaware Tribe of Indians on July 8, 2015. No further response was received from the Delaware Tribe of Indians. In addition, the tribe requested that all work cease and they be contacted in the event of an inadvertent discovery during construction. As discussed in the following section, Equitrans has provided a plan to address inadvertent discoveries pursuant to FERC implementing regulations.

On August 19, 2015, we sent copies of the NOI to the aforementioned tribes. In addition, on December 11, 2015, we invited the tribes to participate as consulting parties concerning the TP-371 Project. None of the tribes have responded to the letters to date.

7.4 Unanticipated Discoveries

Equitrans developed a plan for Unanticipated Discoveries and Emergency Procedures that would be implemented in the event that previously unreported archaeological sites or human remains were encountered during construction of the TP-371 Project. This plan provides for the notification of interested parties, including Native American tribes, in the event of any discovery. We find the plan to be acceptable.

7.5 Compliance with the National Historic Preservation Act

Based on the results of the cultural resources survey, and through consultation with the SHPO and Native American tribes, we conclude that the Project would have no effect on historic properties. Compliance with Section 106 of the NHPA is complete.

7. Air and Noise

8.1 Air Quality

Existing Air Quality

Federal and state air quality standards have been designed to protect human health and the environment from airborne pollutants. The EPA has developed National Ambient Air Quality Standards (NAAQS) for criteria air pollutants such as nitrogen oxides (NO_x), carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), and inhalable particulate matter ($PM_{2.5}$ and PM_{10}). $PM_{2.5}$ includes particles with an aerodynamic diameter less than or equal to 2.5 microns, and PM_{10} includes particles with an aerodynamic diameter less than or equal to 10 microns. The NAAQS are applicable to all counties where the Project is proposed (EPA 2015b). Table B-14 summarizes the NAAQS as designated by the EPA.

Table B-14
National Ambient Air Quality Standards for Criteria Pollutants

Pollutant [Final Rule Citation]	Primary or Secondary	Averaging Time	Level	Form
Carbon monoxide [76 FR 54294, Aug 31, 2011]	Primary	8-hour	9 ppm[a]	Not to be exceeded more than once per year
		1-hour	35 ppm	
Lead [73 FR 66964, November 12, 2008]	Primary and Secondary	Rolling 3-month average	0.15 µg/m3[b]	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, February 9, 2010]	Primary	1-hour	100 ppb[a]	98th percentile, averaged over 3 years
[61 FR 52852, October 8, 1996]	Primary and Secondary	Annual	53 ppb[c]	Annual Mean
Ozone [73 FR 16436, March 27, 2008]	Primary and Secondary	8-hour	0.075 ppm[d]	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
$PM_{2.5}$ Particle Pollution December 14, 2012	Primary	Annual	12 µg/m3	Annual mean, averaged over 3 years
	Secondary	Annual	15 µg/m3	Annual mean, averaged over 3 years
	Primary and Secondary	24-hour	35 µg/m3	98^{th} percentile, averaged over 3 years
PM_{10} Particle Pollution December 14, 2012	Primary and Secondary	24-hour	150 µg/m3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, June 22, 2010]	Primary	1-hour	75ppb[d]	99^{th} percentile of 1-hour daily maximum concentrations, averaged over 3 years
[38 FR 25678, September 14, 1973]	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: EPA 2011.

[a] ppm = parts per million; ppb = parts per billion; ug/m3 = micrograms per cubic meter.

Final rule signed October 15, 2008. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[b] The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 parts per ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

[c] Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continuing obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

[d] Final rule signed June 2, 2010. The 1971 annual and 24-hour SO_2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

Under the Clean Air Act (CAA) of 1970, each state prepares a State Implementation Plan (SIP) to demonstrate the state's air quality management program to attain or maintain the primary and secondary NAAQS. The SIP may also include stricter standards than the NAAQS. Pennsylvania implements its SIP through the PADEP, and has adopted the NAAQS. The combustion of gasoline and diesel fuels during construction would release NO_2, CO, volatile organic compounds (VOC), $PM_{2.5}$, PM_{10}, SO_2, hazardous air pollutants (HAP), and greenhouse gases (GHG). GHGs are naturally-occurring pollutants in the atmosphere and products of human activities, including the burning of fossil fuels. The most common GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), O_3, hydrofluorocarbons, and perfluorocarbons. GHG emissions are generally calculated as carbon dioxide equivalents (CO_2e) where the heating potential of each gas is expressed as a multiple of the heating potential of CO_2e.

The EPA has established Air Quality Control Regions (AQCR) in accordance with Section 107 of the CAA, defined as contiguous areas considered to have relatively uniform ambient air quality, and treated as single geographical units for reducing emissions and determining compliance with the NAAQS. Attainment with the NAAQS is determined based on whether or not measured ambient air pollutant concentrations are above or below the NAAQS and/or state AAQS. The SIP must include measures identifying how applicable air quality standards are achieved as well as maintained in each AQCR. The proposed Project, including the pipeline facilities and work areas, would be located in the Southwest Pennsylvania Intrastate AQCR (40 CFR Part 81).

Areas that meet the NAAQS are termed 'attainment areas,' while areas that do not meet the NAAQS are designated as 'nonattainment.' Areas lacking data to determine attainment are termed 'unclassified areas.' Areas formerly designated as nonattainment are considered 'maintenance areas.' Air quality designations for Armstrong and Indiana Counties are discussed below and summarized in table B-15. Use of the laydown yard in Westmoreland County, Pennsylvania would result in negligible temporary impacts limited to its use for construction.

Armstrong County is designated as marginal nonattainment for the primary 2006 8-hour ozone standard. A portion of Armstrong County containing the Plum Creek (MP 0.0 to MP 2.1) and South Bend Townships (MP 7.9 to 9.5 and MP 10.2 to 15.2) is designated as nonattainment for the primary one-hour SO_2 standard. The same portion of Armstrong County is also designated as a moderate nonattainment area for the 24-hour $PM_{2.5}$ standard; however, a proposed rule to designate the area as attainment was published by the EPA on May 20, 2015 (Federal Register 2015a). A final rule on redesignation is pending. Armstrong County is designated as attainment for all other NAAQS.

Indiana County was designated as nonattainment for the primary one-hour SO_2 standard. Additionally, Indiana County contains a maintenance area for 24-hour $PM_{2.5}$ near Johnstown (Federal Register 2015b); however, the proposed Project would not cross this area. Indiana County is designated as attainment for all other NAAQS.

Table B-15
National Ambient Air Quality Standards Attainment Status for Each County Crossed by the TP-371 Project

Air Pollutant	Indiana County, PA	Armstrong County, PA
SO_2	Nonattainment	Nonattainment[a]/ Attainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
Ozone (8-hour standard)	Attainment	Marginal Nonattainment
PM_{10}	Attainment	Attainment
$PM_{2.5}$	Attainment	Moderate Nonattainment[a,b]/ Attainment
Lead	Attainment	Attainment

[a] Only the portion of Armstrong County containing the Plumcreek (MP 0.0 to 2.1) and South Bend Townships (MP 7.9 to 9.5 and MP 10.2 to 15.2) are in nonattainment.

[b] Proposed to be redesignated by EPA to maintenance. See Federal Register 2015a and 2015b.

Federal Air Quality Requirements

The CAA, 42 U.S.C. 7401 et seq., as amended in 1977 and 1990, and 40 CFR Parts 50 through 99 provide the federal statutes and regulations governing air pollution in the United States. The federal requirements discussed below are expected to be applicable to the Project. New Source Review, Prevention of Significant Deterioration, National Emission Standards for Hazardous Air Pollutants, and impacts on designated Class I areas were not reviewed, as the Project would not include stationary sources. Air quality impacts associated with the Project would result from mobile source emissions (fossil-fueled construction equipment) and fugitive dust.

Conformity of General Federal Actions

According to Section 176(c)(1) of the CAA (40 CFR Section 51.853), a federal agency cannot approve or support activity that does not conform to an approved SIP. Therefore, a conformity analysis to determine whether a Project would conform to an approved SIP is required when a federal action would generate emissions exceeding conformity threshold levels of pollutants for which an air basin is designated as nonattainment or maintenance. A conformity applicability determination requires that direct and indirect emissions of nonattainment or maintenance pollutants (or precursors) resulting from the federal action be compared with general conformity applicability emissions thresholds. If the thresholds are exceeded, general conformity applies and a conformity determination is required.

All emissions from the Project would result from construction; the Project would not result in any operational emissions. A summary of construction emissions, including a comparison with general conformity emission thresholds, is presented in table B-16 and table B-17. As shown herein, all construction emissions would fall beneath general conformity emission thresholds and impacts.

Table B-16
Summary of Estimated Emissions from Construction of the TP-371 Project

Source[a]	2016 Construction Emissions (tons per year)						
	NO_X	CO	SO_2	VOC	PM_{10}	$PM_{2.5}$	CO_2e
Pipeline							
Engine emissions	70.2	14.6	0.03	4.0	2.3	2.3	3,244
Unpaved roads, pipeline installation	--	--	--	--	3.3	0.3	--
Earthmoving	--	--	--	--	30.3	3.2	--
Pipeline Total[b]	**70.2**	**14.6**	**0.03**	**4.0**	**35.9**	**5.8**	**3,244**
Pipeline in Indiana County, PA	19.0	4.0	0.01	1.1	8.1	1.4	876
Pipeline in Armstrong County, PA	51.2	10.7	0.02	2.9	27.8	4.4	2,368
Project Total[b]	**70.2**	**14.6**	**0.03**	**4.0**	**35.9**	**5.8**	**3,244**

[a] Minor emissions from wind erosion may also occur during pipeline construction.
[b] Due to rounding, the totals may not reflect the sum of the addends.

Table B-17
Comparison of Construction Emissions for the TP-371 Project to General Conformity Thresholds

Air Pollutant	PM_{10}	$PM_{2.5}$	NO_X	SO_X	VOC
Indiana County, PA					
Project Construction Emissions	8.1	1.4	19.0	0.01	1.1
General Conformity Threshold[a]	NA	100	NA	100	NA
Armstrong County, PA					
Project Construction Emissions	27.8	4.4	51.2	0.02	2.9
General Conformity Threshold[a]	NA	100	NA	100	NA

[a] General Conformity is only applicable to nonattainment or maintenance areas. Thresholds for each pollutant are based on the severity of the nonattainment areas or maintenance area where the Project is located.

State Regulations

Emissions resulting from the Project are subject to Pennsylvania air quality standards, codified in the PAC. The PAC (25 Section 123.1) limits the emission of outdoor fugitive air contaminants. Sources that generate fugitive dust must take all reasonable actions to prevent particulate matter from becoming airborne. These measures may include, but are not limited to, paving or frequent cleaning of roads, driveways and parking lots and applying water on dirt roads, material stockpiles and other surfaces which may give rise to airborne dusts.

The PAC (25 Section 123.2) prohibits fugitive particulate matter emissions into the outdoor atmosphere to the extent that the emissions are visible at the point the emissions pass outside a person's property. The PAC (25 Section 126.501) established a heavy-duty diesel emission program under Section 177 of the CAA designed to achieve emission reductions of the precursors of ozone, particulate matter, air toxics, and other air pollutants. Certain provisions of the California exhaust emission standards and test procedures were adopted for heavy-duty diesel vehicles manufactured in the year of 1985 and onward.

General Impacts and Mitigation

During construction, including pipeline installation and abandonment activities, a temporary reduction in ambient air quality may result from emissions and fugitive dust generated by construction equipment during land clearing, grading, excavation, concrete work, and vehicles using paved and unpaved roads. Fugitive dust emission levels would vary in relation to soil type, moisture content, wind speed, vehicle traffic, and volume of soils disturbed. Fugitive dust and other emissions from construction activities generally do not result in a significant increase in regional pollutant levels, although local pollutant levels could increase temporarily. Equitrans would take measures to reduce fugitive emissions through the watering of access roads, storage piles, and exposed surfaces during the construction process. Water used for fugitive dust control would be obtained from municipal water sources. Equitrans may also implement vehicle speed limits on unpaved roads and use of gravel pads to remove excess dirt from tracks and tires. All emissions from the Project would result from construction; the Project would not result in any operational emissions.

Criteria pollutant and GHG emissions during construction equipment operation, including construction workers commuting to and from work sites, would result from combustion of gasoline and diesel fuels, primarily NO_2, CO, VOCs, $PM_{2.5}$, PM_{10}, and CO_2e, as well as small amounts of SO_2 and HAPs. Estimated construction emissions for the proposed Project are shown in table B-16. Emissions would occur over the duration of construction activity and would vary along the length of the Project. As a result, impacts from construction equipment would be temporary, transient, and not result in a significant impact on regional air quality or result in any violation of applicable ambient air quality standards.

8.2 Noise and Vibration

Ambient sound quality can be affected during construction and operation of the Project and the magnitude and frequency of sound levels can vary considerably during the day, week, or the seasons, based on changing weather conditions, vegetative cover, and non-Project sources of

noise. Two measures that associate the time-varying quality of sound to its effect on people are the 24-hour equivalent sound level (L_{eq}) and day-night sound level (L_{dn}). The L_{eq} is the level of steady sound with the same total (equivalent) energy as the time-varying sound of interest, averaged over a 24-hour period. The L_{dn} is the L_{eq} plus 10 decibels on the A-weighted scale (dBA), added to account for people's greater sensitivity to nighttime sound (between the hours of 10:00 pm and 7:00 am). The A-weighted scale is used as human hearing is less sensitive to low and high frequencies than mid-range frequencies. The human ear's threshold of perceptible sound level change is considered to be 3 dBA; 6 dBA is clearly noticeable to the human ear, and 9 dBA is perceived as a doubling of sound.

Noise sensitive areas (NSAs) within the vicinity of a project may include residences, schools, churches, or any location where people reside or gather and may be affected by construction and operation of the Project. Construction equipment would contribute to ambient sound levels during construction; however, once construction is complete, noise would return to pre-construction levels.

Regulatory Noise and Vibration Requirements

In 1974, the EPA published its *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* providing information for state and local regulators to use when developing their own ambient noise standards. The EPA has determined that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity noise interference. An L_{dn} of 55 dBA is equivalent to a continuous sound level of 48.6 dBA. For comparison, normal speech at a distance of 3 feet averages 60 to 70 dBA L_{eq}.

The Commonwealth of Pennsylvania has established a motor vehicle noise regulation under 67 Section 157.11 PAC that requires all motor vehicles operated under any condition of grade, load, acceleration, or deceleration to not exceed specified noise limits for the category of motor vehicle within applicable speed limits. No additional noise regulations exist for Armstrong and Indiana Counties.

General Impacts and Mitigation

Construction noise is highly variable as equipment operates intermittently. The type of equipment operating at any location changes with each construction phase. The sound level impacts on NSAs along the pipeline right-of-way due to construction activities would depend on the type of equipment used, the duration of use for each piece of equipment, the number of construction vehicles and equipment used simultaneously, and the distance between the source and receptor.

Construction of the pipeline would result in a temporary increase in ambient sound levels. Sound levels resulting from the use of HDD equipment during construction has the potential to exceed 55 dBA without noise mitigation methods. Construction via HDD is expected to take place primarily during daylight hours, although 24-hour operation may be required. HDD construction noise would be temporary, occurring over a limited timeframe (about two-to-four weeks).

Equitrans proposes to use the HDD construction method at six locations along the right-of-way (see table A-5). NSAs were identified within 0.5 mile of each HDD entry and exit pit, and an acoustical survey and analysis was conducted at the nearest NSAs to each HDD entry and exit pit. In addition, an active bald eagle nest with fledglings was located during the May 2015 surveys within the Project area within 0.5 mile of the HDD-3 entry pit (see section B.3.3). The results of the analysis are documented in table B-18. As shown, results of the HDD assessment indicate that sound levels at multiple NSAs would exceed the FERC guideline of 55 dBA L_{dn}.

Table B-18
Acoustical Survey and Analysis Summary for Horizontal Directional Drills

Nearby NSA	Distance and Direction of NSA from HDD Location[a]	Estimated L_{dn} due to Project Construction (dBA)[b]	Calculated Ambient L_{dn} (dBA)	L_{dn} of Construction plus Ambient L_{dn} (dBA)	Potential Increase Above Ambient (dB)
HDD-1					
NSA A, Residences	170 ft. S	69.1	52.4	69.2	16.8
NSA B, Residence	450 ft. N	57.8	54.6	59.5	4.9
NSA C, Residences	1,600 ft. W	35.3	47.2	47.5	0.3
HDD-2					
NSA D, Residences	260 ft. W	64.5	49.0	64.6	15.6
NSA E, Residences	520 ft. E	55.8	48.9	56.6	7.7
NSA F, Residences	280 ft. E	63.6	44.6	63.7	19.1
NSA G, Residences	780 ft. E	49.7	43.9	50.7	6.8
HDD-3					
NSA H, Residences	1,170 ft. WNW	42.3	40.7	44.6	3.9
NSA I, Residence	1,400 ft. NNE	38.4	50.1	50.4	0.3
NSA J, Residence	430 ft. NW	58.4	55.5	60.2	4.7
NSA K, Residence	740 ft. NW	50.6	43.8	51.4	7.6
NSA L, Residences	790 ft. SE	49.5	45.1	50.9	5.8
NSA M, Residence	1,470 ft. SW	37.3	47.5	47.9	0.4

Table B-18 (continued)
Acoustical Survey and Analysis Summary for Horizontal Directional Drills

Nearby NSA	Distance and Direction of NSA from HDD Location[a]	Estimated L_{dn} due to Project Construction (dBA)[b]	Calculated Ambient L_{dn} (dBA)	L_{dn} of Construction plus Ambient L_{dn} (dBA)	Potential Increase Above Ambient (dB)
HDD-4 & HDD-5					
NSA N, Residence	1,430 ft. E	48.0	48.5	51.2	2.7
NSA O, Residences	910 ft. SSE	57.1	51.1	58.1	7.0
NSA P, Residences	1,340 ft. NE	49.4	60.1	60.5	0.4
NSA Q, Residences	600 ft. SSW	63.8	67.5	69.0	2.5
HDD-6					
NSA R, Residences	1,500 ft. SSE	36.8	41.0	42.4	1.4
NSA S, Residences	1,310 ft. NE	39.9	42.8	44.6	1.8
NSA T, Residences	520 ft. NW	55.8	43.7	56.1	12.4
NSA U, Residences	880 ft. SSW	47.7	51.3	52.9	1.6
NSA V, Residence	380 ft. W	60.0	48.3	60.3	12.0
NSA W, Residence	1,800 ft. SW	32.3	46.6	46.8	0.2

[a] Location: S = south; N = north; W = west; E = east; WNW = west northwest; NNE = north northeast; NW = northwest; NE = northeast; SE = southeast; SW = southwest; SSE = south southeast; and SSW = south southwest;

[b] Estimates include a 10 dB sound reduction due to the use of portable acoustic panels at the HDD entry and exit pit for HDD-1, HDD-2, HDD-3, and HDD-6.

Equitrans would construct the Project during daytime hours to minimize noise impacts. To help mitigate impacts on ambient sound levels, Equitrans would use portable acoustic panels at HDD entry and exit pits associated with HDD-1, HDD-2, HDD-3, and HDD-6; the 10 dB noise reduction associated with these panels is accounted for in the acoustical analysis. Sound levels with acoustic panels would exceed the FERC guidance level of 55 dBA at 8 NSAs (see table B-18). If Equitrans' construction schedule changes at these locations to require operations later than 10:00 pm, additional noise mitigation would be implemented that could include positioning equipment to minimize sound propagation towards NSAs, installation of secondary sound barriers, and temporary relocation of residents. However, to the extent additional noise mitigation measures are proposed if nighttime drilling should be required, we believe these additional measures should be employed during daylight hours as well, particularly at HDDs 1, 2,

and 6, where the potential noise increase above ambient is predicted to exceed 9 db at 5 NSAs, which is perceived as a doubling of sound. Therefore, **we recommend that:**

- **Prior to construction of HDD-1, HDD-2, and HDD-6, Equitrans should file with the Secretary, for review and written approval by the Director of OEP, an HDD noise mitigation plan that incorporates all reasonable measures to reduce the projected noise level attributable to the proposed drilling operations at NSAs with predicted noise levels above 55 Ldn dBA.**

The bald eagle nest in the vicinity of HDD-3 would be about 0.3 mile from the HDD location, which is about 0.2 mile past NSA J, as noted in table B-18. The bald eagle nest is further buffered from the HDD entry point by forest. Equitrans would use acoustic panels so that HDD-3 construction would not result in a predicted increase over ambient sound levels by more than 7.6 dB at the nearest NSAs, and sound would further attenuate before reaching the bald eagle nest. Therefore, we do not anticipate that HDD construction would disturb nesting bald eagles. Equitrans does not propose the use of acoustic panels at HDD-4 and HDD-5; rather, Equitrans would limit construction to daylight hours. The increased sound associated with HDD construction would be below 3 dB and would not be perceptible at NSAs N, P, and Q. At NSA-O, the cumulative Ldn at NSA-O would increase by 7 dB above ambient sound levels (see table B-18). In the event that nighttime construction is required at HDD-4 and HDD-5, Equitrans would use portable acoustic panels to reduce sound impacts. To ensure that NSAs are not exposed to excessive noise impacts during nighttime operations, **we recommend that:**

- **Prior to nighttime and/or 24-hour drilling activities at any HDD location, Equitrans should file a nighttime noise mitigation plan for review and written approval by the Director of OEP. During any nighttime drilling operations, Equitrans should implement the approved plan, monitor noise levels, and make all reasonable efforts to reduce the noise attributable to the drilling operations at NSAs with a predicted noise level above 55 Ldn dBA.**

Based on the temporary nature of HDD construction and the mitigation measures that Equitrans would implement to minimize impacts on nearby NSAs, and our recommendations above, there would be no significant noise impact associated with HDD construction. Cumulative impacts from HDD construction noise are discussed in section B.11.9. Because the Project does not include operation of new or modified compressor stations, the Project would not result in any operational noise impacts. Based on the analyses conducted and the mitigation measures proposed, we conclude that construction and operation of the proposed Project would not result in significant sound level impacts on residents, or the surrounding communities.

7. Reliability and Safety

The transportation of natural gas by pipeline involves some incremental risk to the public due to the potential for accidental release of natural gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If

breathed in high concentration, oxygen deficiency can result in serious injury or death. Methane has an auto-ignition temperature of over 1,000 degrees Fahrenheit and is flammable at concentrations between 5 and 15 percent in air. An unconfined mixture of methane and air is not explosive; however, it may ignite if there is an ignition source. A flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses upward rapidly in air.

The DOT is mandated to provide pipeline safety under 49 U.S.C. Chapter 601. The DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards that set the level of safety to be attained and require the pipeline operator to use various technologies to achieve safety. PHMSA ensures that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local levels.

Section 5(a) of the Natural Gas Pipeline Safety Act provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards, while Section 5(b) permits a state agency that does not qualify under Section 5(a) to perform certain inspection and monitoring functions. A state may also act as DOT's agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement actions. Pennsylvania is authorized by PHMSA under Section 5(a) to assume all aspects of the safety program for intrastate, but not interstate, facilities (PHMSA 2015).

The DOT pipeline standards are published in 49 CFR Parts 190 through 199. Part 192 specifically addresses natural gas pipeline safety issues. Under a MOU on Natural Gas Transportation Facilities, dated January 15, 1993, between the DOT and the FERC, the DOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.12(a)(9)(vi) of the FERC's regulations require that an applicant certify that it would design, install, inspect, test, construct, operate, replace, and maintain the facility for which a Certificate is requested in accordance with federal safety standards and plans for maintenance and inspection. Alternatively, an applicant must certify that it has been granted a waiver of the requirements of the safety standards by the DOT in accordance with Section 3(e) of the Natural Gas Pipeline Safety Act. The FERC accepts this certification and does not impose additional safety standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the MOU to promptly alert the DOT. The MOU also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipelines under the Commission's jurisdiction. The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee, which determines if proposed safety regulations are reasonable, feasible, and practicable.

The pipeline and aboveground facilities associated with the Project must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the

public and to prevent natural gas facility accidents and failures. The DOT specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion.

The DOT also defines area classifications, based on population density near the pipeline, and specifies more rigorous safety requirements for populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined below:

- Class 1: Location with 10 or fewer buildings intended for human occupancy;
- Class 2: Location with more than 10 but less than 46 buildings intended for human occupancy;
- Class 3: Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period; and
- Class 4: Location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. For instance, pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock. Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock.

Class locations also specify the maximum distance to a sectionalizing block valve (for example, 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). Pipe wall thickness and pipeline design pressures; hydrostatic test pressures; maximum allowable operating pressure (MAOP); inspection and testing of welds; and the frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas. Pipeline patrols would conduct leak surveys using an infrared gas detector and in accordance with 49 CFR 192.705 and 49 CFR 192.706, which require patrols to occur up to four times per year, depending on the location and pipeline class.

The proposed Project would be constructed through Class 1 and 2 areas. Throughout the life of the pipeline, Equitrans would monitor population changes near the pipeline through its integrity management program, which includes mapping and aerial photography reviews. If a subsequent increase in population density adjacent to the right-of-way results in a change in class location for the pipeline, Equitrans would reduce the MAOP, or replace the segment with pipe of sufficient grade and wall thickness if required, in order to comply with the DOT requirements for the new class location. However, Equitrans has designed the proposed Project to Class 3 standards to avoid the need for future replacements in the event that class locations for the pipeline increase to Class 3.

The Pipeline Safety Improvement Act of 2002 requires operators to develop and follow a written integrity management program that contains all the elements described in 49 CFR 192.911 and addresses the risks on each transmission pipeline segment. More specifically, the law establishes an integrity management program which applies to all high consequence areas (HCAs).

The DOT has published rules that define HCAs as areas where a gas pipeline accident could considerably harm people and their property and that require an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate for the DOT to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area. Equitrans has identified no HCAs along the proposed pipeline route.

The DOT prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Each pipeline operator is required to establish an emergency plan that includes procedures to minimize the hazards of natural gas pipeline emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- emergency system shutdown and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property, and making them safe from actual or potential hazards.

Under 49 CFR 192.615, each pipeline operator must also establish an Emergency Plan that provides written procedures to minimize hazards from a natural gas pipeline emergency. Equitrans' Emergency Plan contains procedures to enable the public and officials to recognize and report a natural gas emergency.

The DOT requires that each operator establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. Equitrans maintains an ongoing liaison with the appropriate fire, police, and public officials to coordinate mutual assistance during emergencies. Because the proposed Project involves the replacement of an existing pipeline, local authorities in the Project area are already familiar with emergency procedures and plans associated with these facilities.

Equitrans would comply with all applicable DOT pipeline safety standards as well as regular monitoring and testing of the pipeline. In addition, the purpose of the proposed Project is to improve safety by replacing the 1950-1960-era Existing Segment with the upgraded Replacement Segment. We are confident that with implementation of the required design, monitoring, and testing criteria, Equitrans would construct and operate the facilities safely.

10. Polychlorinated Biphenyls and Asbestos

PCBs are organic chemicals, also referred to as chlorinated hydrocarbons. PCBs were widely used between the 1930s and 1970s in the production of commercial products such as plastics, adhesives, electrical equipment, finishes, motor oils, and oil-based paints (EPA 2015c). The chemicals were banned from use in 1979 when it became known that they have toxic effects on human and animal health. PCBs were found to cause cancer and deficiencies of the immune, reproductive, endocrine, and neurological systems (EPA 2015c). Since PCBs do not break down over time, it is possible that PCBs may be found on vintage pipeline coatings, finishes, and electrical components

Since PCBs were banned from manufacturing, Congress has enacted regulations enforcing laboratory testing of certain commercial products for PCBs and disposal of contaminated products at approved facilities. The proposed replacement, abandonment in place (Existing Segment), and abandonment by removal (valves and a pig launcher/receiver) of the existing TP-371 gas pipeline facilities would be managed in accordance with 40 CFR 761 for potential PCBs contamination. The disposal of PCBs in concentrations greater than 50 parts per million (ppm) is regulated by the EPA; however, based on Equitrans' experience with similar pipeline projects, the proposed Project is not expected to have a concentration of PCBs in excess of 50 ppm.

Handling asbestos-containing materials (ACMs) is regulated by the Occupational Safety and Health Administration (OSHA). Equitrans has developed a specific set of mitigation measures for handling ACMs in accordance with OSHA regulations and EPA guidance.

10.1 PCB Management

The potential for exposure to PCBs would be limited to the construction phase at the locations where the Existing Segment would be exposed and prepared for capping and grouting, and at facilities proposed for removal (launcher/receivers, drip tanks, and valves). If free flowing liquids were encountered during the proposed abandonment activities, Equitrans would coordinate the sampling of liquids with an accredited laboratory. If PCBs were detected and disposal were required, Equitrans would obtain the necessary disposal permit from the EPA for substance disposal. Decontamination or substance disposal efforts would comply with Subpart M of 40 CFR 761 and requirements of the TSCA. Decontamination efforts would be conducted by collecting wipe samples until reported concentrations are below 10 µg/100 centimeters^2). Decontamination efforts would be conducted by qualified personnel, each donning appropriate personal protective equipment such as impermeable coveralls, gloves, shoe covers, goggles, and a respirator. Additional safety measures used to collect and ship samples would include placing impenetrable materials such as plastic beneath the sampling location and during shipping to collect any potential release of contaminated substances. In addition, all samples would be

shipped using DOT-approved containers. If decontamination efforts do not result in acceptable concentrations, Equitrans would dispose of contaminated materials at a landfill approved under the TSCA. Impacts on public safety from PCB exposure are not expected as the management and handling of PCBs would be limited to Equitrans' workers and subcontractors.

10.2 Asbestos Management

The potential for asbestos exposure would be limited to the construction phase at the locations where capping and grouting of the existing pipeline segment are planned. In preparation for these activities, Equitrans would collect samples of the pipe coatings and test the samples for ACMs. Sampling activities would be conducted by qualified personnel, each donning appropriate PPE such as respirators and gloves.

If ACMs were present, Equitrans would implement measures to avoid or minimize exposure. Mitigation measures to minimize the number of airborne fibers would include dampening materials and banning the use of hand-operated power tools. All abatement work or worker activity in the vicinity of ACMs would be conducted in accordance with federal, state, and local requirements. Equitrans would dispose of ACMs at approved asbestos management facilities. Impacts on public safety from asbestos exposure are not expected as asbestos management and handling would be limited to Equitrans' workers and subcontractors.

10. Cumulative Impacts

In accordance with NEPA and FERC policy, we evaluated the potential for cumulative impacts of the Project. Cumulative impacts were assessed for the proposed Project when added to other past, present, and reasonably foreseeable future activities. Cumulative effects generally refer to impacts that are additive or synergistic in nature and result from the construction of multiple projects in the same vicinity and time frame. Cumulative impacts represent the incremental effects of a proposed action when added to other past, present, or reasonably foreseeable future actions, regardless of the agency or party undertaking such actions. Cumulative impacts can result from individually minor, but collectively significant actions, taking place over a period of time. In general, small-scale projects with minimal impacts of short duration do not significantly contribute to cumulative impacts.

This cumulative impact analysis generally follows the methodology set forth in relevant guidance (CEQ 2005; EPA 1999). Under these guidelines, inclusion of other projects in the analysis is based on identification of impacts from other projects that would result in similar effects as the proposed Project. The cumulative impacts analysis includes those past, present, and reasonably foreseeable projects meeting the following three criteria:

- impact a resource area potentially affected by the Project;
- cause this impact within all, or part of, the Project area; and
- cause this impact within all, or part of, the timespan for the potential impact for the Project.

The proposed Project would affect a confined corridor within Armstrong and Indiana Counties, Pennsylvania. For this analysis, we assessed a cumulative effects area for each environmental resource in which impacts have the potential to be cumulative; the region of influence varies by resource as further defined under each resource area discussed below. Because the laydown yard proposed for use in Westmoreland County, Pennsylvania would result in negligible, temporary impacts limited to its use for construction, and would be restored to pre-construction conditions, it is not expected to discernably contribute to cumulative impacts when considered with other projects in the vicinity. Although no non-jurisdictional facilities have been identified for the proposed Project, Equitrans would use an existing power pole to support the proposed new Walnut Road groundbed at MP 1.7 and would coordinate with West Penn Power to power the new Walnut Road groundbed. Use of the existing power pole is not expected to contribute to measurable environmental impacts.

Information regarding planned developments was obtained through Equitrans' consultation with local authorities and through our own research. Equitrans consulted public sources for each county or municipality crossed by the proposed pipeline route to obtain information on any planned future developments. To date, no planned commercial, residential, or other developments have been identified within 0.25 mile of the proposed Project facilities.

Recently completed, current, proposed, or reasonably foreseeable future actions in the general Project area that may have cumulative impacts with the Project are shown in table B-19; this area accounts for the largest of the resource-specific regions of influence (air quality and socioeconomics). The region of influence is determined for each resource and described in each resource-specific assessment, below. The projects identified in the regions of influence include seven energy projects and various projects to upgrade and/or expand infrastructure. Not included in table B-19, but discussed in section B.1.1 are seven active oil and gas wells four abandoned surface and underground mines, as well as one abandoned mine spoil area that would be within the construction workspace of the Project.

Energy projects related to oil and gas development from the Marcellus shale include development of wells, gathering lines, and transmission pipelines. The FERC's environmental jurisdiction relating to these activities is limited to interstate natural gas pipelines. Production and gathering facilities are not regulated by the FERC but are overseen by the region's state and local agencies with jurisdiction over the management and extraction of shale oil and gas resources. Energy development projects are identified in table B-19. In addition to the specific energy development projects identified in table B-19, over 22,500 active oil and gas production wells and supporting infrastructure are located in Armstrong and Indiana Counties (PGDC 2015). Oil and gas development is ongoing in these counties.

Based on the following discussion, potential impacts most likely to be cumulative with the Project's impacts are related to geology, water resources, vegetation and wildlife (including federally and state listed endangered and threatened species), air quality, and noise. The proposed pipeline facilities could contribute to these cumulative impacts; however, Equitrans would minimize adverse Project impacts by implementing mitigation measures identified in section B of this EA, and would collocate the proposed pipeline with the existing right-of-way to the extent practicable.

Table B-19
Existing or Proposed Projects with Potential Cumulative Impacts in the Region of Influence

Project and Proponent [a]	County within Region of Influence	Status	Potential Impact Area	Closest Known Distance to Project[b]	Description	Sources
FERC-Jurisdictional Projects						
Rural Valley Project, Dominion Transmission, Inc. (Dominion)	Armstrong County, PA	Existing	25 acres	2.2 miles	Construction of the Rural Valley Compressor Station and a total of 1.4 miles of 8-inch- and 10-inch-diameter pipelines in Armstrong County, Pennsylvania; other Project components include four metering and regulation stations.	FERC 2009
Lebanon West II Project, Dominion	Armstrong County, PA	Proposed	12.7 acres	2.2 miles	Upgrades to the existing Rural Valley Compressor Station as part of a larger replacement and upgrade Project to transport an additional 130,000 dekatherms per day of natural gas	FERC 2015
Northeast Expansion Project, Dominion	Indiana County, PA	Existing	18.5 acres	20 miles	Addition of 32,440 horsepower at three existing compressor stations, including 6,130 horsepower at the existing Punxsutawney Compressor Station in Jefferson and Indiana Counties.	FERC 2011
Appalachia to Market 2014 Project, Texas Eastern	Indiana County, PA	Existing	21 acres	15.2 miles	Construction of pipeline loops and upgrades at existing compressor stations, including installation of a new 18,100 horsepower gas compressor unit at the Armagh Compressor Station in Indiana County, to transport 600,000 dekatherms per day of natural gas.	FERC 2013
Mariner East 2 Project, Sunoco Pipeline, L.P.	Indiana County, PA	Proposed	Unknown [c]	6.5 miles	Construction of a new pipeline to provide 272,750 barrels per day of new capacity for the transportation of ethane, propane and butane in Pennsylvania.	FERC 2014
Energy and Other Pipeline Projects						
Gathering Pipeline Project, Equitrans	Armstrong County, PA	Existing	Unknown [c]	2.2 miles	Construction of a 12-inch-diameter, 8.1-mile-long gathering pipeline that would cross 0.4 mile of federal land at Crooked Creek Lake.	COE 2013
Coral-Graceton Deep Mine, Rosebud Mining Company	Indiana County, PA	Existing	Unknown [c]	10 miles	Construction and operation of a single pit, underground coal mine.	COE 2012b

Table B-19 (Continued)
Existing or Proposed Projects with Potential Cumulative Impacts in the Region of Influence

Project and Proponent [a]	County within Region of Influence	Status	Potential Impact Area	Closest Known Distance to Project[b]	Description	Sources
Infrastructure and Other Projects						
Armstrong County Shelocta to Whitesburg	Armstrong County, PA	Current	Unknown [c]	0 mile	Resurfacing of SR 422 between intersections of SR 2007 and SR 422.	Pennsylvania Department of Transportation (PennDOT) 2015
Various	Armstrong and Indiana Counties, PA	Current	Unknown [c]	>2 miles	PennDOT has multiple projects, including bridge replacements, road resurfacing, and road improvements in the counties crossed by the Project	PennDOT 2015

[a] The following projects identified by AVC and OVEC are located outside the regions of influence assessed for cumulative impacts: the Equitrans Expansion Project (36 miles from the TP-371 Project), MVP Project (90 miles), Atlantic Coast Pipeline Project (112 miles), the Appalachian Connector Project (route pending, not located in Pennsylvania), and the WB Xpress Project (115 miles).

[b] Distances are estimated based on publically available data. A distance of "0 mile" indicates an overlap of affected lands with the proposed Project.

[c] Acreage could not be verified for this assessment.

11.1 Geology and Soils

As Project impacts on geology and soils would highly localized and limited primarily to the project footprint during the period of construction, cumulative impacts on geology and soils would only occur if other projects are constructed at the same time and place as the proposed facilities. Therefore, the region of influence for cumulative impacts on geology and soils is the footprint of the proposed Project. There are three ways that the Project, in addition to other projects in the region of influence, may have cumulative impacts on geology and soils resources: (1) they may affect existing mineral resources, such as mines, quarries, or oil and gas wells; (2) they may be subject to natural geological hazards; or (3) they may result in soil erosion or compaction.

Existing oil and gas wells and abandoned mining operations are located within the Project footprint. The general geologic setting of the Project may pose potential erosion and landslide hazards as a result of steep slopes in the Appalachian Plateaus province and these projects may be subject to increased erosion and landslide hazards. Construction in close proximity could result in a cumulative increase in the number of landslides that occur in the region of influence.

Equitrans would implement mitigation measures to reduce the potential for slope failure and minimize impacts associated with erosion in areas of high landslide potential. In addition, federal projects would employ best management practices to limit effects on soils; Equitrans would minimize incremental impacts on soils through implementation of the FERC Plan and county conservation district approved erosion and sediment control plans. Equitrans would implement measures to mitigate for the possibility of impacts on the pipeline from mine subsidence as described in section B.1.1. Therefore, we conclude that cumulative impacts on geology and soils from the Project in consideration with other projects would be minor.

11.2 Water Resources and Wetlands

Because impacts on surface waters and wetlands can result in downstream contamination or turbidity, the region of influence for cumulative impacts on water resources and wetlands includes each HUC-12 subwatershed crossed by the Project. Hydrologic units define the source area that contributes surface water to a specified outlet point, and they are delineated based on surface water flow along natural hydrologic breaks. HUC-12 subwatersheds typically define the drainage area upstream of tributaries to major rivers, and range from 10,000 to 40,000 acres in size. The TP-371 Project would cross six HUC-12 subwatersheds (see table B-6). The Project, in addition to other projects in the region of influence, may have cumulative impacts on water resources and wetlands including changes in groundwater recharge; impacts on surface and groundwater quality; sedimentation and increased turbidity due to erosion or construction within surface waters; and temporary and permanent impacts on wetlands. Construction of the proposed Project would result in temporary and minor impacts on groundwater and surface water resources. Temporary, minor impacts on PEM and PSS wetlands would occur. Impacts on PFO wetlands would be long-term within the temporary construction right-of-way. Permanent impacts on PFO wetlands would include conversion to PEM wetlands within the maintained portion of the permanent right-of-way. Additionally, the loss of PEM wetlands located within the footprint of access roads would be permanent.

Regulation of hydraulic fracturing has increased due to public concern over its potential impacts on groundwater, specifically, the potential migration of oil and the use of chemicals in the fracturing fluid. PADEP is the permitting agency responsible for regulation of water use associated with hydraulic fracturing in Pennsylvania; requirements include measures for the protection of water quality and well casing standards. Drilling companies must also disclose the chemical additives used in hydraulic fracturing fluid for wells. Researchers at collaborating universities conducted an analysis of 64 groundwater wells over the Marcellus Shale in northeastern Pennsylvania to detect organic chemicals used during hydraulic fracturing during drilling activities. Although trace levels of certain chemicals were encountered, those levels were below the EPA's maximum contaminant levels. In addition, further review of the data indicated that the presence of these chemicals is likely from surface routes (such as accidental spills) rather than subsurface routes (chemicals rising from fractured rock) (Drollette et al. 2015). Similarly, the Susquehanna River Basin Commission (SRBC) monitored water quality at 59 stations in northeastern Pennsylvania and southern New York to document water quality in small, headwater streams with the potential to be affected by hydraulic fracturing by testing macroinvertebrate biotic integrity, a common indicator of the biological health of streams. The SRBC found neither a correlation between biotic integrity and well pad density within the associated watershed, nor between biotic integrity and distance between to the nearest well pad (SRBC 2015). Because drilling activities are subject to state regulations to protect water quality, and given recent water quality studies, we anticipate that ongoing and proposed projects in conjunction with the proposed Project would not contribute to significant cumulative impacts on groundwater.

Many of the projects identified in table B-19 are located within the same subwatersheds that would be crossed by the TP-371 Project, including the Rural Valley Project and Lebanon West II Project; some of these would result in direct and indirect impacts on wetlands and waterbodies during construction and operation. Therefore, the Project, when considered with other projects in the vicinity, would result in cumulative impacts on water resources and wetlands. However, impacts on surface waters associated with the Project would be temporary, including sedimentation from construction areas. Because the proposed Project and other projects would be required to comply with any mitigation requirements and permit conditions in its CWA Section 404 and 401 permits for any permanent wetland impacts, and the incremental impacts of the Project would be temporary and minor, we conclude that cumulative impacts would not be significant.

11.3 Vegetation and Wildlife

Vegetation varies by ecoregion and wildlife often utilize specific vegetative habitats; therefore, cumulative impacts on vegetation and wildlife may occur within the Western Allegheny Plateau ecoregion. As the ecoregion is vast (about 26 million acres), changes in the vegetative community, from the proposed Project and other projects in the vicinity, would occur at a much smaller scale. Direct effects would occur from vegetation clearing and changes in land use within the immediate footprint of the proposed Project; indirect effects would occur from the potential spread of invasive species and changes in interior forest habitat from fragmentation. To account for the indirect effects of the proposed Project, the region of influence for cumulative effects on vegetation includes a 1-mile radius around the Project centerline. Similarly, direct effects on smaller wildlife would occur within the construction footprint of a given project;

indirect effects would be more likely to occur on larger or more mobile species that could readily leave the Project area and move into adjacent, suitable habitat. Due to the availability of similar habitat adjacent to the Project footprint available for relocation of mobile species, the region of influence for cumulative effects on wildlife includes a 1-mile radius around the Project centerline.

One road resurfacing project is known to be within 1 mile of the Project, in addition to existing oil and gas wells and mining operations. The road resurfacing Project is not expected to impact vegetation and wildlife since it would likely be confined to existing road surfaces, and other projects are not expected to be under construction during the same time period as the Project. Construction at the same time, or in the vicinity, would increase the total acreage of impacts and habitat fragmentation, and would lengthen the recovery time for affected vegetation communities. Removal of vegetation by clearing during construction would be the primary impact on vegetation communities by the proposed Project and other projects in the region of influence. Long-term impacts would occur due to the removal of forested vegetation, which is the dominant cover type in the Project area. Permanent impacts would occur during operation of the proposed Project and other projects due to the conversion of forested land to open land for maintenance of the permanent right-of-way and at groundbed locations.

Previous activities in the Project area have resulted in significant impacts on forest cover, fragmentation, and composition. The Western Allegheny Plateau ecoregion was dominated by unfragmented forest in pre-colonial times. During the late eighteenth and early nineteenth centuries, regional clearing for logging activities and agriculture resulted in significant impacts on forest cover resulting in forest loss and fragmentation (Robertson and Rosenberg 2003). Following these losses, forests have undergone secondary succession and revegetation and the total area of forest in the Project area has increased (Robertson and Rosenberg 2003); forests now represent 60 percent of the land in Pennsylvania (PDCNR 2000). However, periodic timber harvesting is ongoing in the region, and the forests in the Project area are young because of the periodic harvesting of timber. Riiters et al. (2002) found that most forest in the contemporaneous United States is fragmented. For example, between 84 and 99 percent of the Project area is within 0.7 mile of the nearest road (Coulston et al. 2005).

Cumulative impacts, such as those on vegetative cover types and wildlife habitat, are additive. Many wildlife species depend on mature contiguous tracts of forest to sustain their migratory and reproduction cycles. These species include songbirds and terrestrial mammals that require large tracts of forest to support their home ranges. Equitrans would minimize impacts on vegetation and wildlife habitat by collocating the Project with existing rights-of-way where practicable and by implementing the measures in the FERC Plan and Procedures. Additionally, similar habitats are located adjacent to and in the vicinity of construction activities that are expected to be sufficient to support wildlife displaced during construction. The portions of the existing right-of-way for the pipeline to be abandoned would be allowed to revert to forest in forested area offsetting the permanent clearing for the Replacement Segment.

Cumulative impacts on federally and state listed threatened and endangered species and federal species of concern could occur if other projects were to affect the same habitats as the Project. However, the ESA consultation process includes a consideration of the current status of affected species and cumulative impacts would be minimized. We conclude that the cumulative

impacts on vegetation and wildlife resources, including threatened and endangered species, would not be significant based on the addition of the Project's impacts on these resources.

11.4 Land Use and Visual Resources

The majority of Project impacts on general land uses would be restricted to the construction workspaces, therefore, the region of influence for land use is the construction footprint. As the majority of Project impacts would be temporary, cumulative impacts would only occur for projects occurring in the same time and space as the proposed facilities. Based on the information available for projects identified in table B-19, one road resurfacing project is known to be within the footprint of the Project; that project is not expected to impact land use since it would likely be confined to existing road surfaces.

Changes in land cover, including forest fragmentation, have occurred since the eighteenth century in the region, as discussed in section B.11.3. The construction and operation of the Project and other reasonably foreseeable future projects would require the temporary and permanent use of land, which would result in temporary and permanent impacts on land use. Implementation of our Plan and Procedures would minimize impacts on land use. Because the proposed pipeline would be co-located with the existing right-of-way where practicable, forest fragmentation would be minimized, as only 5 percent of the pipeline route deviates from the existing right-of-way, and fewer visual impacts would occur. Other projects would implement similar best management practices based on federal or state requirements.

Construction of the proposed TP-371 Project and other projects in the region of influence could have a cumulative effect on recreation and special interest areas; the cumulative effects would be most significant if the projects were constructed at or near the same time and in close proximity to one another. Equitrans' Gathering Pipeline Project crosses the Crooked Creek Recreation Area; construction for the Gathering Pipeline and TP-371 Replacement Projects would not be concurrent. Therefore, the proposed Project would have little to no contribution to cumulative impacts on the Crooked Creek Recreation Area.

Visual impacts from the proposed Project would be greatest in areas of forest conversion where the changes in vegetative cover would be more noticeable from a greater distance. Given the steep topography in the vicinity of the proposed Project, the region of influence for visual impacts includes a 1-mile radius around the Project centerline. Based on the information available for projects identified in table B-19, one road resurfacing project is known to be within the footprint of the Project; that Project would have negligible visual impacts since it would likely be confined to existing road surfaces. Visual impacts along the proposed right-of-way would be minor and would primarily result from the conversion of forested land to open land. The conversion of forested land to open land has the potential to affect its use as a visual buffer and reduce its aesthetic quality. However, the proposed Project route has been visible to the public since the existing pipeline was installed in the 1950s and 1960s, and no major aboveground facilities are proposed for the Project. Therefore, no significant permanent visual impacts are anticipated. Negligible long-term and permanent cumulative impacts on visual resources could result from the clearing of forested lands for construction and maintenance of the permanent right-of-way for the proposed Project and other projects. However, we conclude these impacts would not be significant.

11.5 Socioeconomics

Construction of the proposed Project, along with other projects in the region of influence, would result in cumulative socioeconomic impacts including increased employment during construction and tax revenues. Local workers employed to work the Project would likely live in the Project vicinity; outside workers would be expected to stay in the counties crossed by the Project to be near their worksites. Local communities would also benefit from increased spending by construction crews at restaurants, hotels, and retailers. Additionally, taxes are paid to affected counties during construction; therefore, the counties affected by the proposed Project are considered to be the region of influence for cumulative impacts on socioeconomics. Construction-related impacts from the proposed Project on employment and tax revenues would generally be temporary and minor; other major energy projects and oil and gas production within the region of influence would likely have similar economic impacts during construction. For example, the National Bureau of Economic Research found that, in counties where oil and natural gas production using horizontal drilling and hydraulic fracturing techniques occurs, increased wages, royalty payments, and employment benefit both the county and surrounding areas. For each million dollars of oil and gas extracted in a given county, 0.78 jobs, $66,000 in wage income, and $61,000 in royalty payments are generated within the county (Feyrer et al. 2015). The Project would have negligible socioeconomic impacts during operation.

Construction of the proposed Project could result in minor, temporary impacts on some roads due to construction within the roadway and the movement of heavy equipment and personnel. Because Equitrans would implement mitigation measures to ensure traffic safety and would implement measures to maintain traffic flow, minimal disruption of traffic would be expected (see section B.6.2). Concurrent construction of the proposed Project and other projects in the vicinity could result in a temporary and minor cumulative impact on transportation due to increased use of roadways.

11.6 Cultural

Because direct effects on cultural resources are highly localized, cumulative impacts would only occur if other projects are constructed in the same place or affect the same historic properties affected by the proposed Project. The proposed Project would not affect NRHP eligible or listed sites; however, as we do not know the extent of impacts that other projects may have on cultural resources or viewsheds, we have considered all projects within a 1-mile radius of the proposed Project to be within the region of influence for cumulative impacts. The projects identified in table B-19 are not expected to affect the same cultural resources identified within the APE for the TP-371 Project. Additionally, these actions would be required by federal law and/or state regulation to avoid, minimize, and mitigate impacts on cultural resources in a similar manner as the proposed Project. Therefore, any potential incremental increase in cumulative impacts on cultural resources from these projects in consideration with the proposed Project would be negligible.

11.7 Air Quality

Air quality monitoring for compliance with the EPA-designated NAAQS and NAAQS attainment determinations are made for each county where the Project is proposed. Attainment

with the NAAQS is determined based on whether or not measured ambient air pollutant concentrations are above for below the NAAQS. Therefore, construction and operation of the proposed Project and other projects were considered for cumulative impacts on air quality if they occurred in a county crossed by the proposed Project. Air emissions from projects located in the region of influence would be additive. Each project would be required to meet applicable state and federal air quality standards to avoid significant impacts on air quality. During construction, emissions would occur in all counties crossed by the Project; however, impacts from construction would be temporary and would not result in a significant impact on regional air quality or result in any violation of applicable ambient air quality standards. Any potential cumulative impacts from construction of the Project with other projects in the region of influence would be limited to the duration of the construction period, and would be temporary and minor. During operation, the Project would not contribute to ongoing air emissions.

As discussed in section B.8.1, impacts from construction equipment would be temporary, as no new permanent emissions sources are being constructed, and would not result in a significant impact on regional air quality or result in any violation of applicable ambient air quality standards. Furthermore, each of the projects identified in table B-19 would be required to meet all applicable federal and state air quality standards that are designed to avoid significant impacts on air quality. Therefore, we conclude that the Project would not result in significant cumulative impacts on regional air quality.

11.8 Climate Change

Climate change is the change in climate over time, whether due to natural variability or as a result of human activity. Climate change occurs on a global scale and cannot be represented by single annual events or individual anomalies. For example, a single large flood or particularly hot summer is not an indication of climate change. However, unusually frequent or severe flooding, or several consecutive years of abnormally hot summers over a large region may be indicative of climate change. The construction emissions of GHGs associated with the Project are provided in section B.8.1; no operation emissions would occur. However, the emissions from the TP-371 Project would increase the atmospheric concentration of GHGs. In combination with past and future emissions from all other sources, GHG emissions from the Project would incrementally contribute to climate change. Climate impacts are not attributable to any single action. Currently, there is no standard methodology to determine how the proposed Project's relatively small incremental contribution to GHGs would translate into physical effects on the global environment.

11.9 Noise

Because the impact of noise is highly localized and attenuates quickly as the distance from the noise source increases, only projects within 1 mile would likely contribute to a cumulative noise impacts along the proposed pipeline route or on NSAs affected by the TP-371 Project. Noise impacts would occur during construction of the proposed Project and other projects identified in table B-19. One project is known to be within 1 mile of the proposed TP-371 Project. It is unlikely that construction from the proposed Project and other projects would occur concurrently in the vicinity of one NSA. Due to the linear nature of the Project, construction-related noise impacts would be of a short duration in a given area. During

construction, noise would be generally limited to daylight hours and would not be expected to reach the FERC's L_{dn} guideline of 55 dBA, except where HDD construction would exceed an L_{dn} of 55 dBA at multiple NSAs (see section B.8.2). Impacts would be temporary and limited to the duration of construction, and Equitrans would use portable acoustic panels at HDD entry and exit pits associated with HDD-1, HDD-2, HDD-3, and HDD-6. In addition, we have recommended in section B.8.2 that Equitrans develop noise mitigation plans for HDD-1, HDD-2, and HDD-6, and for any HDD for which work would extend into the evenings, to further minimize noise impacts to nearby NSAs. Therefore, we conclude that the Project would not result in significant cumulative noise impacts.

11.10Conclusions on Cumulative Impacts

We conclude that impacts associated with the Project would be relatively minor, and we are recommending additional measures to further reduce the environmental impacts associated with the Project. The impacts from other existing and proposed projects or general activities within the region of influence are also expected to be temporary and minor. Therefore, we anticipate that the proposed Project would contribute to a negligible to cumulative impact when the effects of the Project are added to past, present, and reasonably foreseeable projects in the region of influence.

C. ALTERNATIVES

In accordance with NEPA and Commission policy, we evaluated alternatives to the Project to determine whether they would be reasonable and environmentally preferable to the proposed action. These alternatives included the no action alternative, system alternatives, major pipeline route alternatives, and minor route variations. No significant aboveground facilities are proposed. The evaluation criteria used for developing and reviewing alternatives were:

- technical and economic feasibility and practicality;
- significant environmental advantage over the proposed action; and
- ability to meet the Project's stated objective.

Information used to evaluate alternatives to the proposed Project included review of areas maps and data provided by Equitrans in its application. Each alternative was considered to the point where it was clear that the alternative was not reasonable, would result in environmental impacts that would be greater than those of the proposed Project, or that could not meet the Project objective.

In addition, minor alignment shifts may be required prior to and during construction to accommodate currently unforeseeable site- specific constraints related to engineering, landowner, and environmental concerns. These would be subject to review and approval by the FERC.

7. No-Action Alternative

If the Commission were to deny Equitrans' application, the Project would not be built and the environmental impacts identified in this EA would not occur. Under this alternative, Equitrans would not be able to modernize the TP-371 pipeline to address its aging infrastructure. The Project would allow for integrity assessment through use of in-line inspection, and would improve operational efficiency and reliability. Although pursuing the No-Action alternative would avoid the environmental impacts associated with the Project, we have demonstrated in our analysis that these impacts would not be significant. We conclude that the No-Action alternative would not meet the objectives of the proposed action.

2. Major Route Alternatives

Since the Project would replace the existing pipeline, Equitrans would be able to follow and use the majority (78 percent) of its existing right-of-way. Equitrans plans to construct the replacement pipeline at 10- to 15-foot offsets from the existing pipeline to the greatest extent practicable (approximately 95 percent of the route). As such, major route alternatives would not be necessary and would result in greater environmental impacts. Therefore, we only considered route variations.

2. System Alternatives

The stated purpose of the Project is to improve efficiency and reliability of the TP-371 pipeline. Therefore, we conclude that system alternatives would not be viable alternatives to the proposed TP-371 Project. No other existing or modified systems would have the ability to meet the objectives of the Project, which is designed to maintain the current service to existing customers along Equitrans' TP-371 pipeline.

2. Minor Route Variations

Route variations differ from system or major route alternatives in that they are identified to resolve or reduce construction impacts on localized, specific resources such as cultural resource sites, wetlands, recreational lands, residences, and terrain conditions. While route variations may be at most a few miles in length, most are relatively short and in close proximity to the proposed route. Route variations are identified in response to specific local concerns and may not always clearly display an environmental advantage other than to reduce impacts on a localized level.

Minor route variations away from the existing right-of-way were based on constructability and avoidance of sensitive environmental features. In some areas, different construction techniques, such as HDD, have been proposed in an effort to follow the existing right-of-way, while at the same time avoiding sensitive environmental features such as wetlands and waterbodies. However, constructability and engineering constraints do not always allow for different construction techniques to be employed.

The proposed right-of-way deviates from the existing right-of-way in seven locations (see table A-3). These variations are included in the proposed route evaluated in section B of this EA. The proposed right-of-way is within 110 feet of the existing right-of-way at all but two locations. The first is between MP 10.4 to 10.7 where it interconnects with the Girty Station. No sensitive resources would be affected by this variation as it occurs in non-forested uplands. The second route variation occurs between MP 15.1 and 15.3. Following surveys, Equitrans determined that a minor route variation was required at this location in an effort to avoid crossing a pond and an adjacent waterbody. The minor route variation is about 300 feet longer than the existing right-of-way; however, it avoids impacts on the waterbodies and was incorporated into the proposed Replacement Segment route.

A route variation was reviewed between MP 1.6 and 1.8 to avoid two wetlands located within the existing pipeline right-of-way; however, the variation was not incorporated into the Project due to the amount of tree clearing (about 3 acres) that would be required to avoid the wetlands. No other alternatives to the Project facilities have been identified that would offer a significant environmental advantage to the proposed Project. In conclusion, we have determined that the proposed Project is preferable to any alternative to meet the project objectives.

D. STAFF CONCLUSIONS AND RECOMMENDATIONS

We conclude that approval of the TP-371 Project would not constitute a major federal action significantly affecting the quality of the human environment. This finding is based on the above environmental analysis, Equitrans' application and supplements, and implementation of Equitrans' proposed and our recommended mitigation measures. We recommend that the Commission Order contain a finding of no significant impact and that the following mitigation measures be included as conditions of any Certificate the Commission may issue.

1. Equitrans shall follow the construction and abandonment procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EA, unless modified by the Order. Equitrans must:

    a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;

    b. justify each modification relative to site-specific conditions;

    c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and

    d. receive approval in writing from the Director of the OEP **before using that modification**.

2. The Director of OEP has delegated authority to take whatever steps are necessary to ensure the protection of all environmental resources during construction and operation of the Project. This authority shall allow:

    a. the modification of conditions of the Order; and

    b. the design and implementation of any additional measures deemed necessary (including stop-work authority) to assure continued compliance with the intent of the environmental conditions as well as the avoidance or mitigation of adverse environmental impact resulting from Project construction and operation, and activities associated with abandonment.

3. **Prior to any construction,** Equitrans shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, EIs, and contractor personnel will be informed of the EIs' authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

4. The authorized facility locations shall be as shown in the EA, as supplemented by filed alignment sheets. **As soon as they are available, and before the start of construction or abandonment,** Equitrans shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the

Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

Equitrans' exercise of eminent domain authority granted under NGA Section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. Equitrans' right of eminent domain granted under NGA Section 7(h) does not authorize it to increase the size of its natural gas pipelines or aboveground facilities to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. Equitrans shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, laydown yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area**.

   This requirement does not apply to extra workspace allowed by the Plan, and/or minor field realignments per landowner needs and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

   Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

   a. implementation of cultural resources mitigation measures;

   b. implementation of endangered, threatened, or special concern species mitigation measures;

   c. recommendations by state regulatory authorities; and

   d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.

6. **Within 60 days of the acceptance of the Certificate and before construction or abandonment begins**, Equitrans shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP. Equitrans must file revisions to the plan as schedules change. The plan shall identify:

   a. how Equitrans will implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EA, and required by the Order;

b. how Equitrans will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;

c. the number of EIs assigned, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;

d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;

e. the location and dates of the environmental compliance training and instructions Equitrans will give to all personnel involved with construction and restoration (initial and refresher training as the Project progresses and personnel change);

f. the company personnel and specific portion of Equitrans' organization having responsibility for compliance;

g. the procedures (including use of contract penalties) Equitrans will follow if noncompliance occurs; and

h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:

(1) completion of all required surveys and reports;

(2) the environmental compliance training of onsite personnel;

(3) the start of construction; and

(4) the start and completion of restoration.

7. Equitrans shall employ at least one EI per construction spread. The EIs shall be:

a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;

b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;

c. empowered to order the correction of acts that violate the environmental conditions of the Order, and any other authorizing document;

d. a full-time position, separate from all other activity inspectors;

e. responsible for documenting compliance with the environmental conditions of that Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and

f. responsible for maintaining status reports.

8. Beginning with the filing of its Implementation Plan, Equitrans shall file updated status reports with the Secretary on a **biweekly basis until all construction and restoration activities are complete.** On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

   a. an update on Equitrans' efforts to obtain the necessary federal authorizations;

   b. the construction status of the Project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;

   c. a listing of all problems encountered and each instance of noncompliance observed by the EI during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);

   d. a description of the corrective actions implemented in response to all instances of noncompliance, and their cost;

   e. the effectiveness of all corrective actions implemented;

   f. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and

   g. copies of any correspondence received by Equitrans from other federal, state, or local permitting agencies concerning instances of noncompliance, and Equitrans' response.

9. **Prior to receiving written authorization from the Director of OEP to commence construction of any Project facilities**, Equitrans shall file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

10. Equitrans must receive written authorization from the Director of OEP **before placing the Project into service.** Such authorization will only be granted following a determination that rehabilitation and restoration of the right-of-way and other areas affected by the project are proceeding satisfactorily.

11. **Within 30 days of placing the authorized facilities in service and within 30 days of completing the abandonment of the authorized facilities,** Equitrans shall file an affirmative statement with the Secretary, certified by a senior company official:

a. that the facilities have been constructed and abandoned in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or

b. identifying which of the conditions in the Order Equitrans has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

12. **Within 30 days of placing the facilities in service,** Equitrans shall file a report with the Secretary discussing whether any complaints were received concerning well yield or water quality and how each was resolved.

13. **Prior to construction**, Equitrans shall commit to segregating topsoil only over the trenchline in wetlands, except where standing water is present, and file revised typical construction drawings for wetland crossings with the Secretary for review and written approval by the Director of OEP.

14. **Equitrans shall not clear trees** between April 1 and November 14 **until**:

a. Equitrans has completed additional consultation with the FWS concerning the avoidance, minimization, and mitigation of impacts on migratory birds, and has filed documentation of this consultation with the Secretary; and

b. Equitrans has received written notification from the Director of OEP that construction or use of mitigation may begin.

15. Equitrans shall restrict all Project activities within 660 feet of any newly encountered bald eagle nests. If Project activities are required within this buffer zone, Equitrans shall first consult with the FWS to determine recommended guidelines and permit requirements, and file with the Secretary documentation of its additional consultation with the FWS for review and written approval by the Director of OEP.

16. **Equitrans shall not clear trees** between April 1 and September 30 **until**:

a. staff completes additional consultation with the FWS regarding the northern long-eared bat; and

b. Equitrans has received written notification from the Director of OEP that construction or use of mitigation may begin.

17. **Prior to construction of HDD-1, HDD-2, and HDD-6**, Equitrans shall file with the Secretary, for review and written approval by the Director of OEP, an HDD noise mitigation plan that incorporates all reasonable measures to reduce the projected noise level attributable to the proposed drilling operations at NSAs with predicted noise levels above 55 Ldn dBA.

18. **Prior to nighttime and/or 24-hour drilling activities at any HDD location**, Equitrans shall file a nighttime noise mitigation plan for review and written approval by the Director of OEP. During any nighttime drilling operations, Equitrans shall implement the approved plan, monitor noise levels, and make all reasonable efforts to reduce the noise attributable to the drilling operations at NSAs with a predicted noise level above 55 Ldn dBA.

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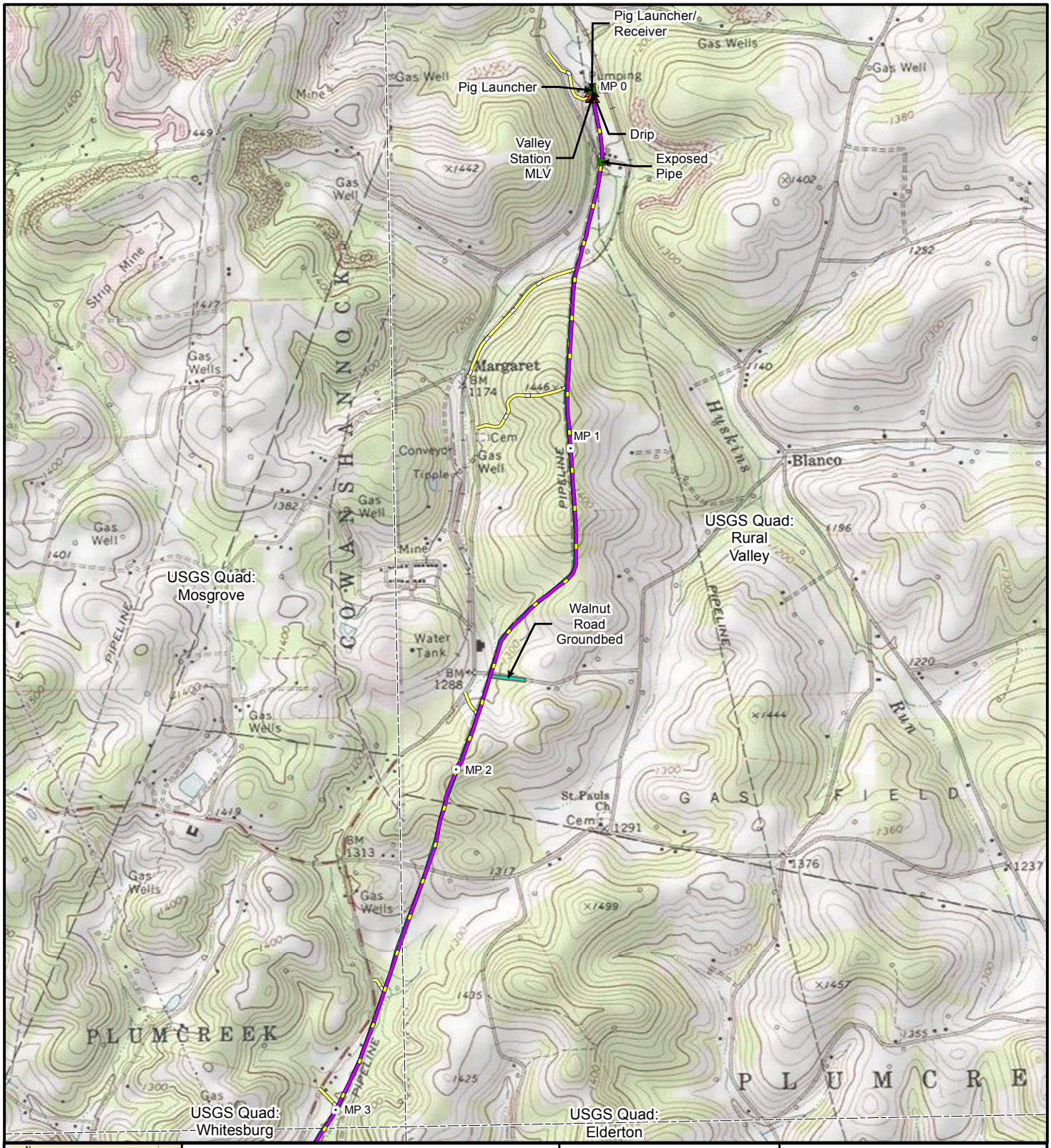
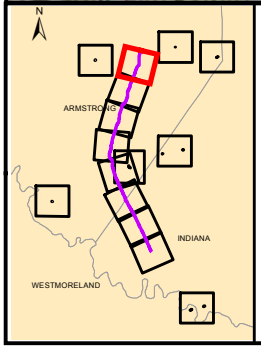
APPENDIX A

TOPOGRAPHIC MAPS FOR THE TP-371 PROJECT





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- Existing Aboveground Facility To Be Abandoned
- Replacement Segment Aboveground Facility
- Groundbed
- Replacement Segment
- Existing Segment
- Proposed Access Road
- USGS 7.5 min quad

0 0.25 0.5
Miles

N

Scale: 1:24,000

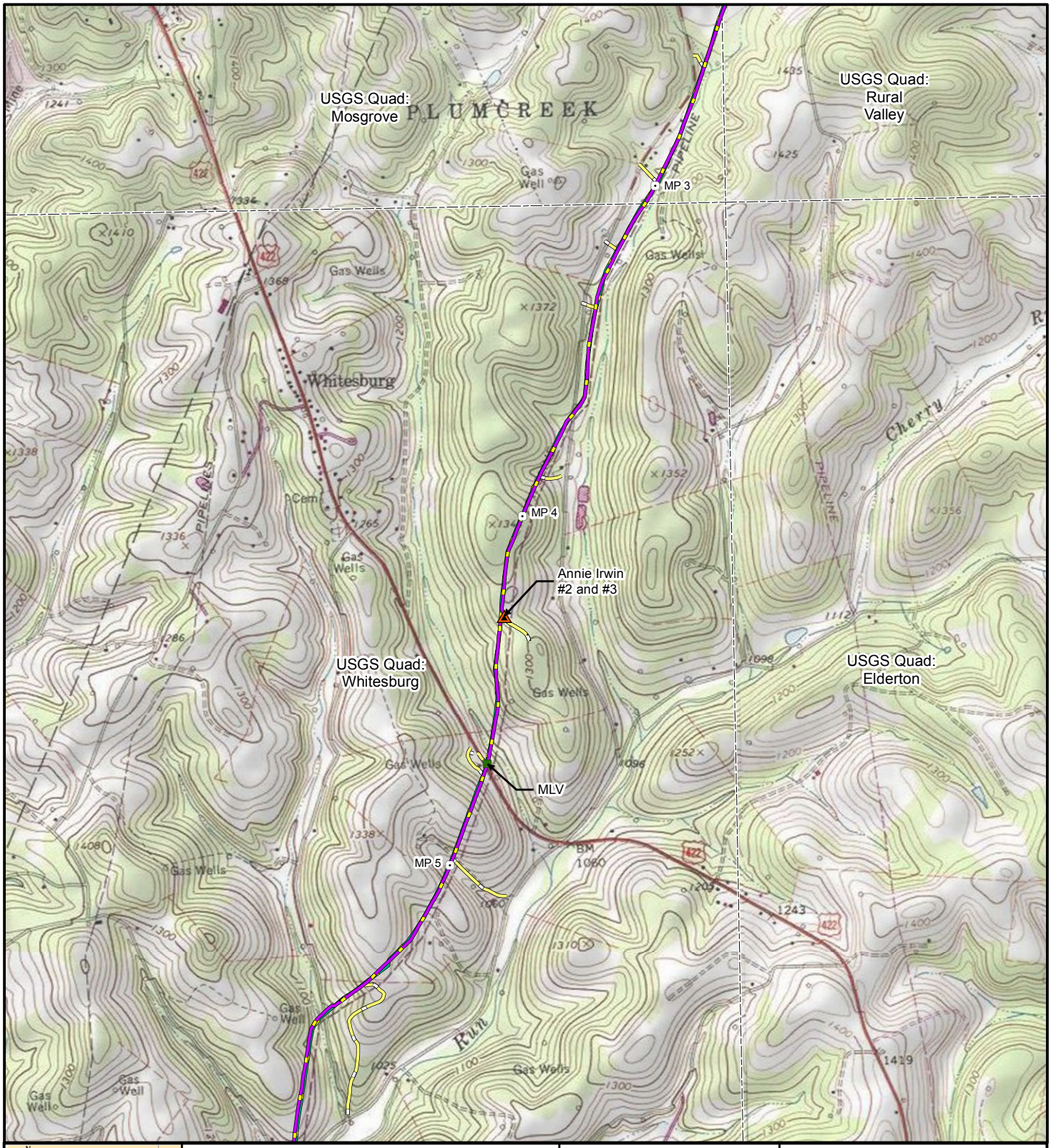
Basemap: USGS 1:24000 Series Topographic Quadrangles: Avonmore, McIntyre, Mosgrove, Rural Valley, and Whitesburg

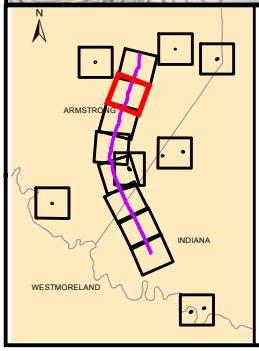
TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

Map 1 of 15

APPENDIX A





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Miles

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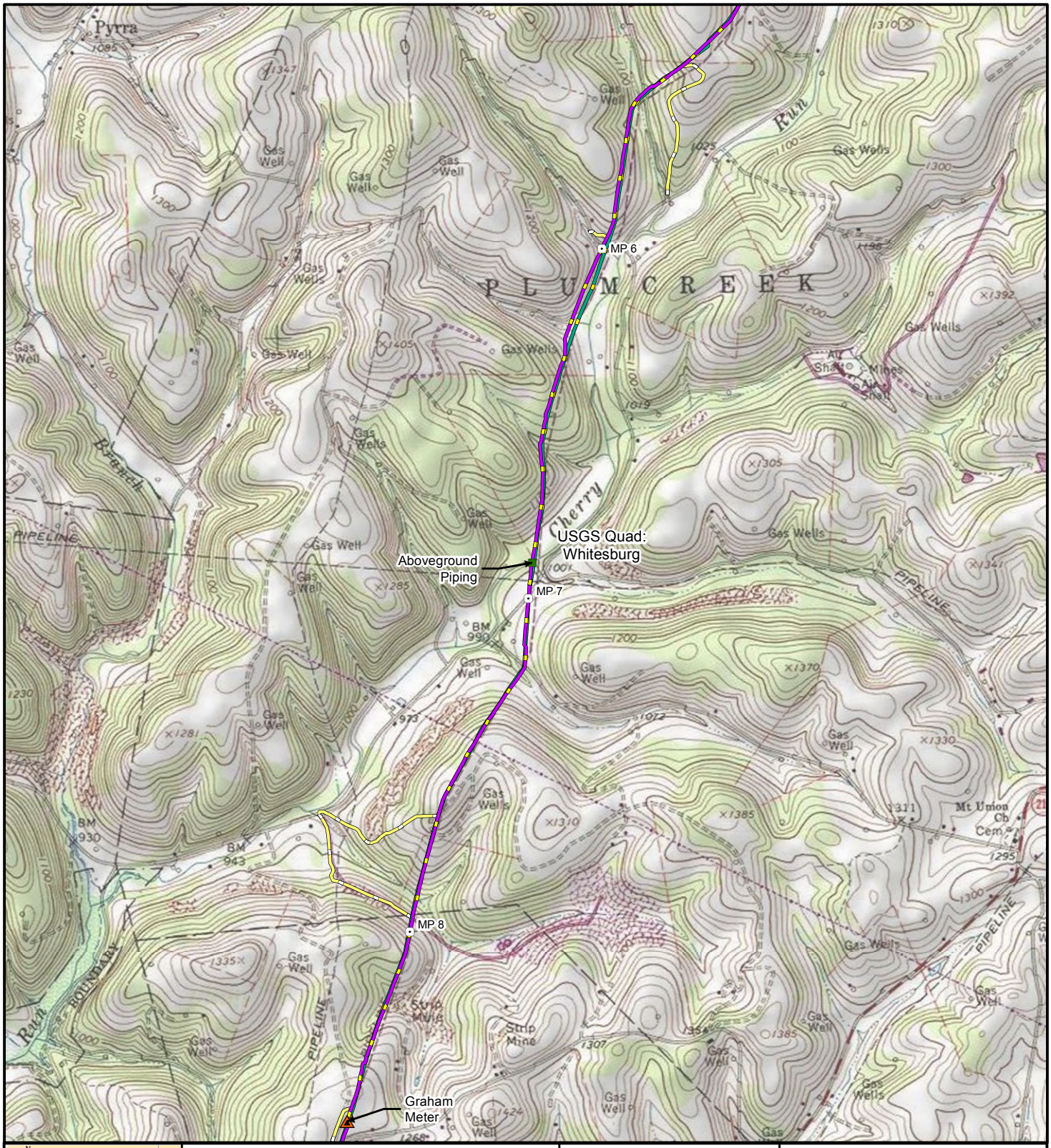
TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

Map 2 of 15

APPENDIX A



TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

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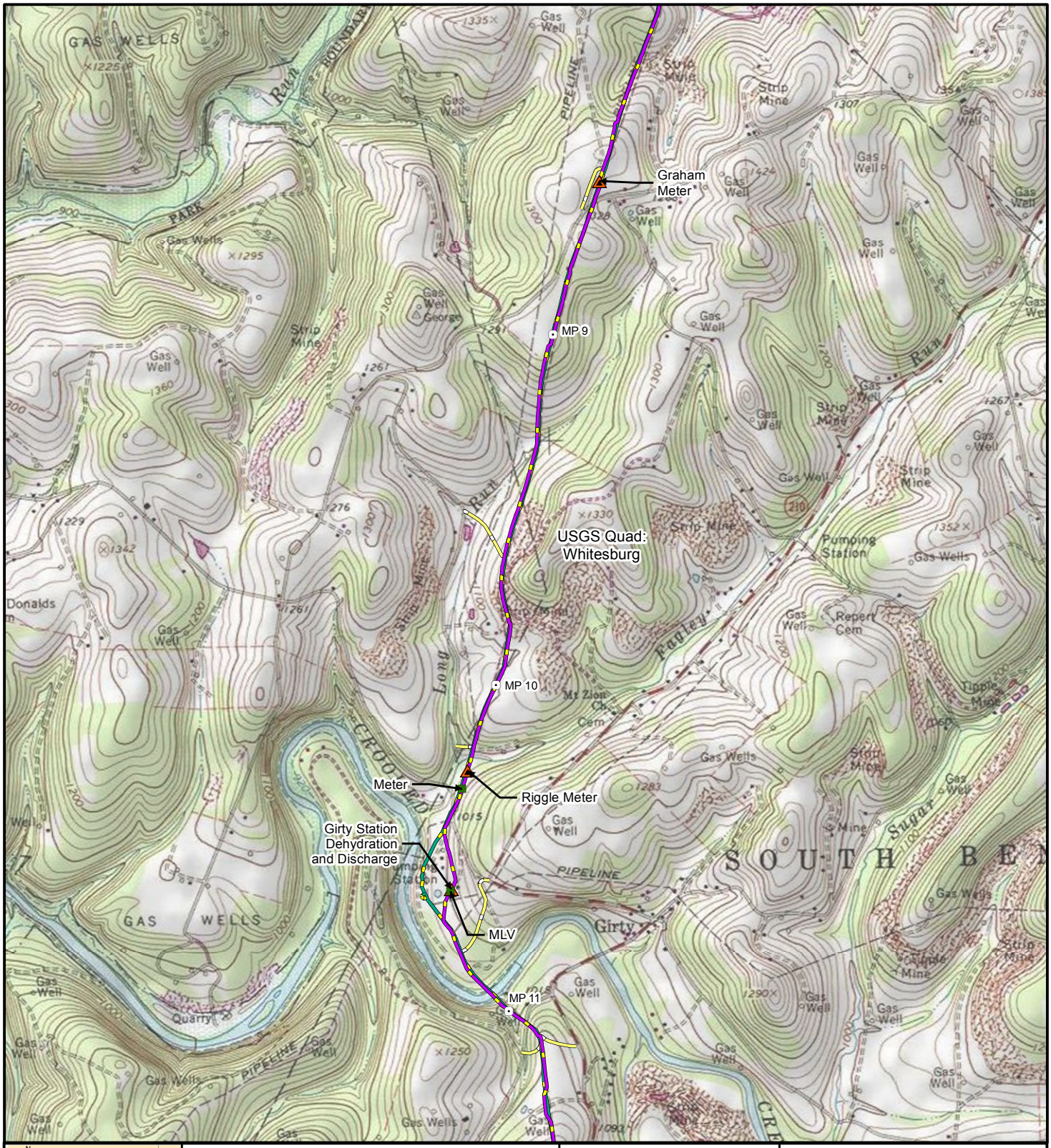
APPENDIX A



TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

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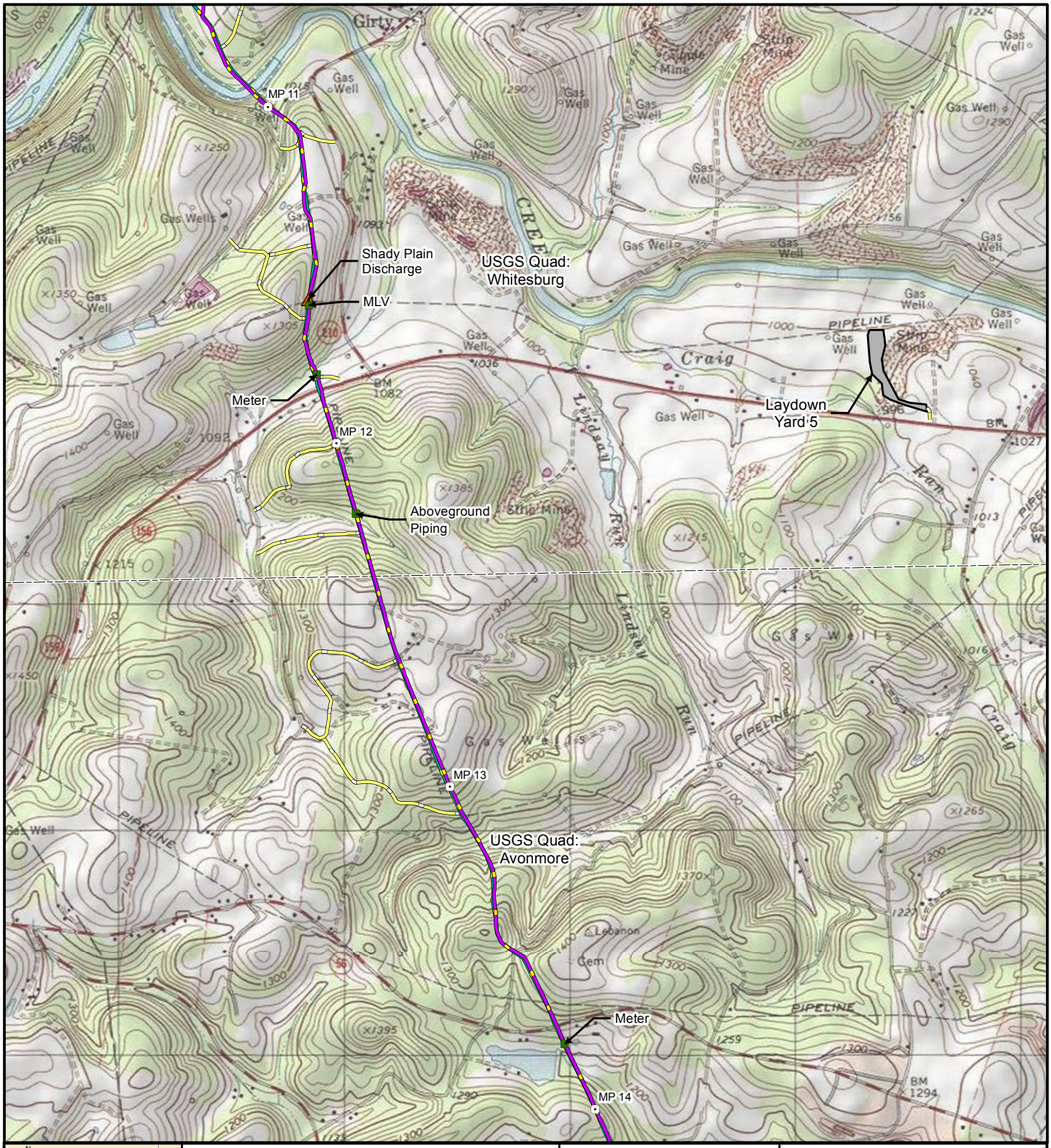
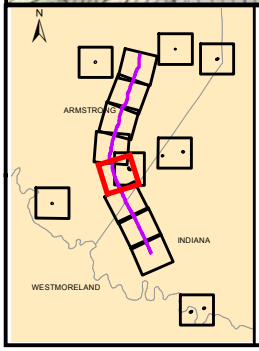
APPENDIX A





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- Groundbed
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- Proposed Laydown/Contractor Yard
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0 0.25 0.5
Miles

N

Scale: 1:24,000

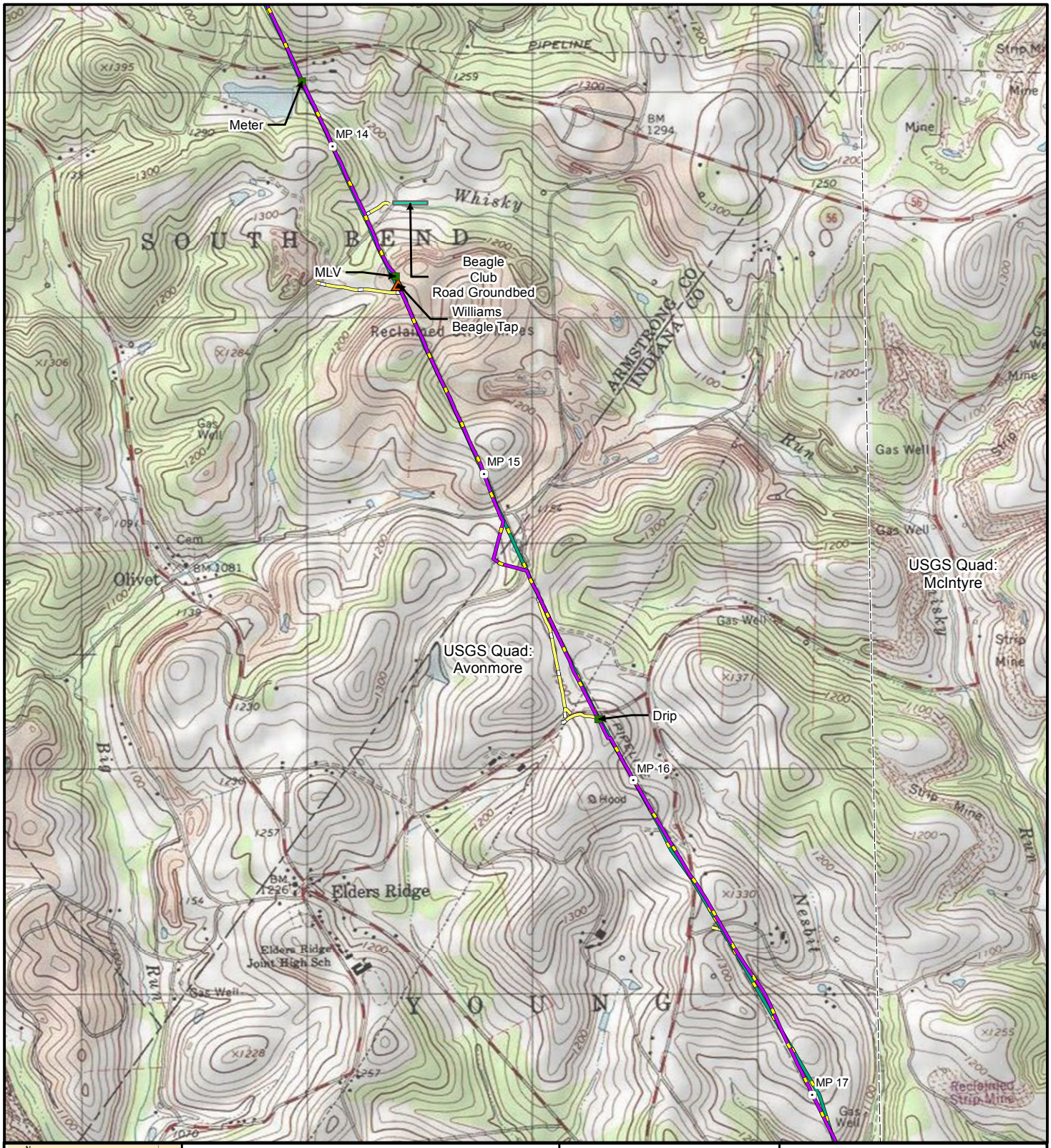
Basemap: USGS 1:24000 Series Topographic Quadrangles: Avonmore, McIntyre, Mosgrove, Rural Valley, and Whitesburg

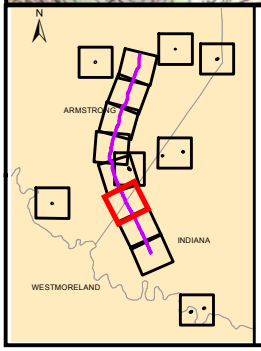
TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

Map 5 of 15

APPENDIX A





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- Groundbed
- Replacement Segment
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- Proposed Access Road
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0 0.25 0.5
Miles

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TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

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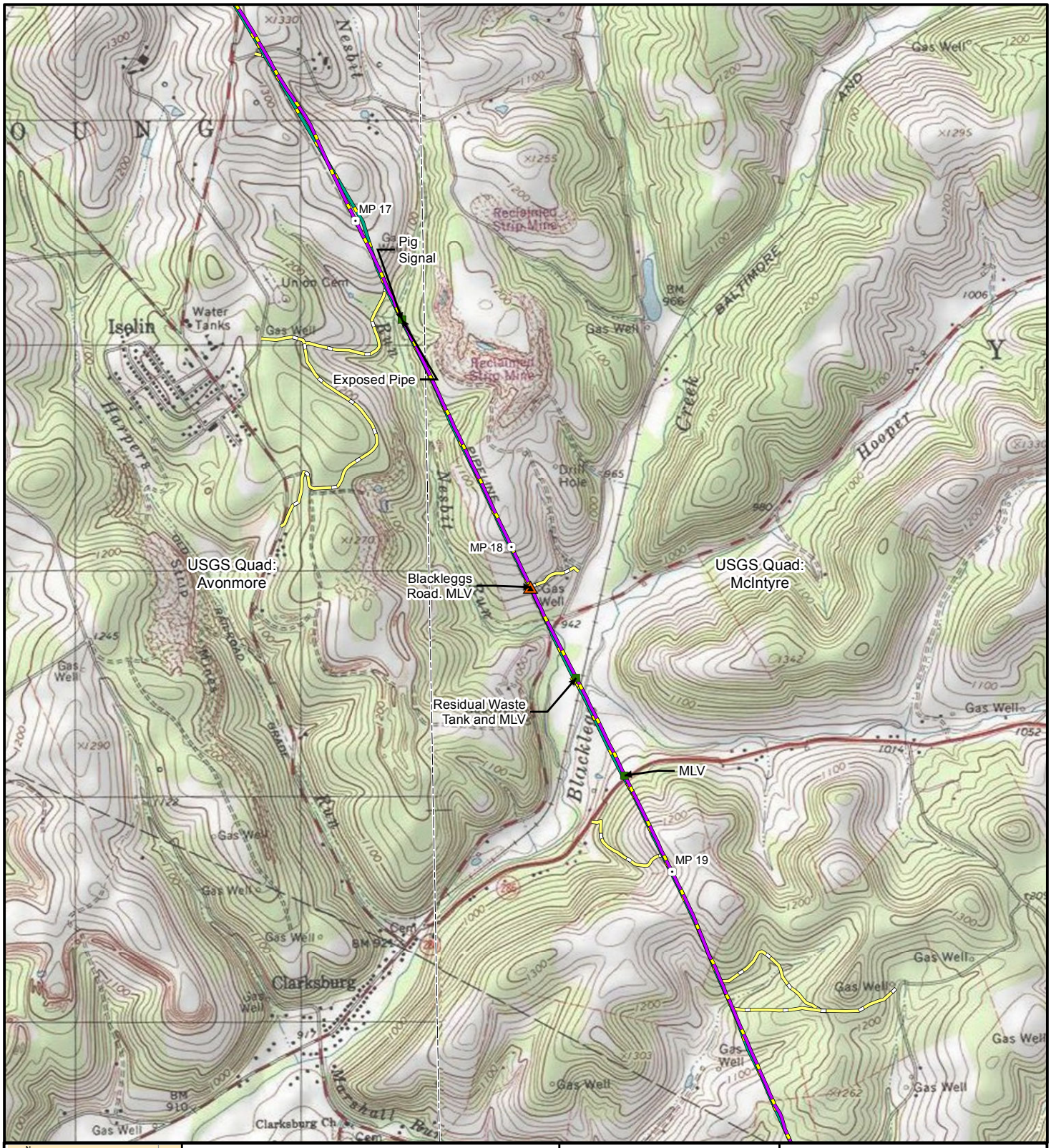
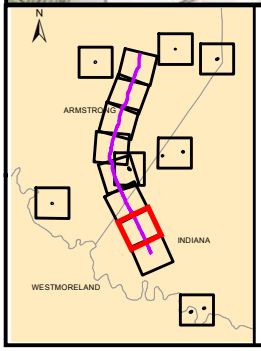
APPENDIX A





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Miles

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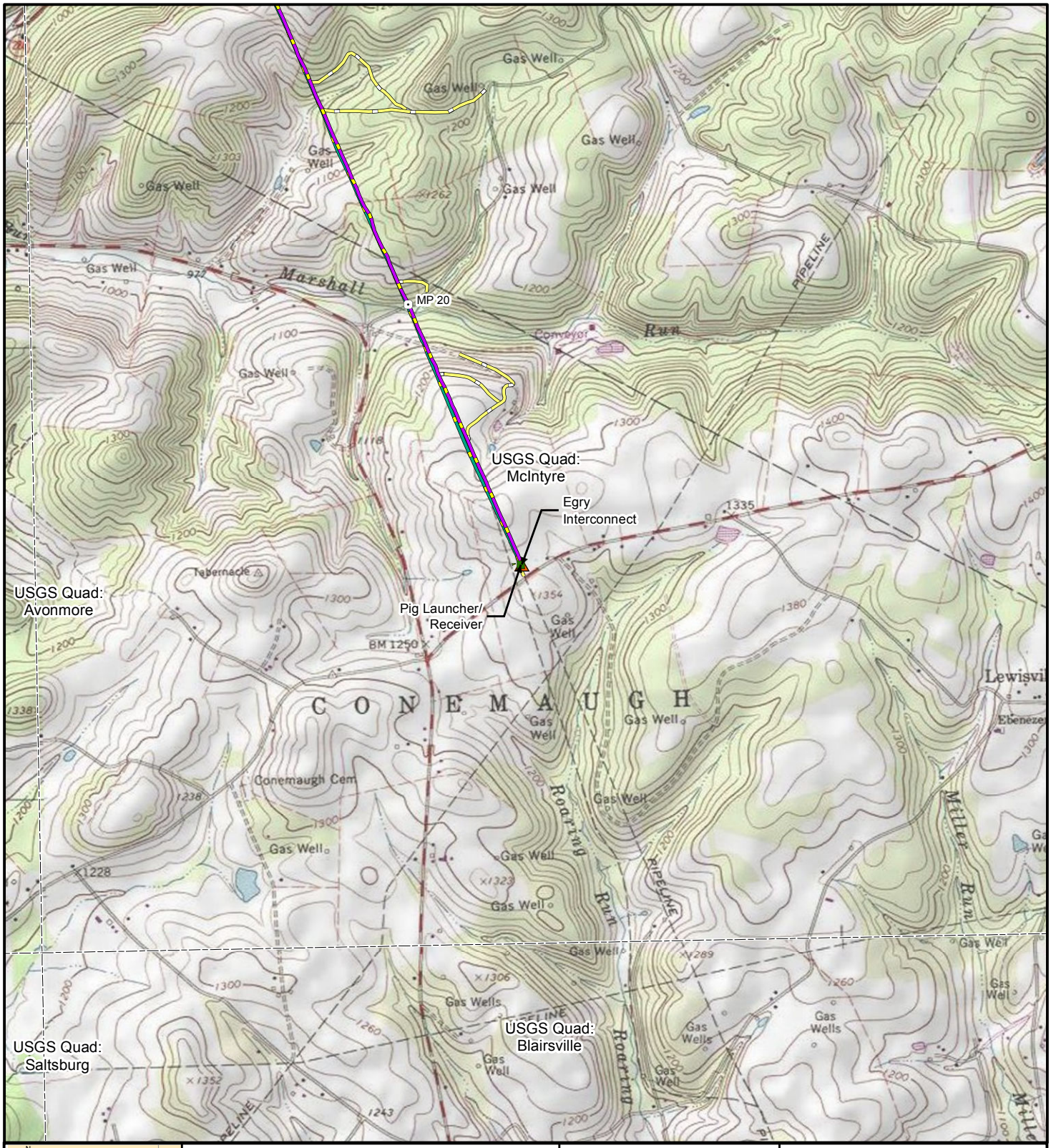
Basemap: USGS 1:24000 Series Topographic Quadrangles: Avonmore, McIntyre, Mosgrove, Rural Valley, and Whitesburg

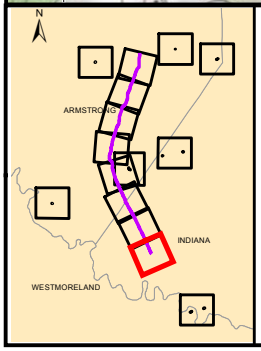
TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

Map 7 of 15

APPENDIX A





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- Existing Segment
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Miles

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TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

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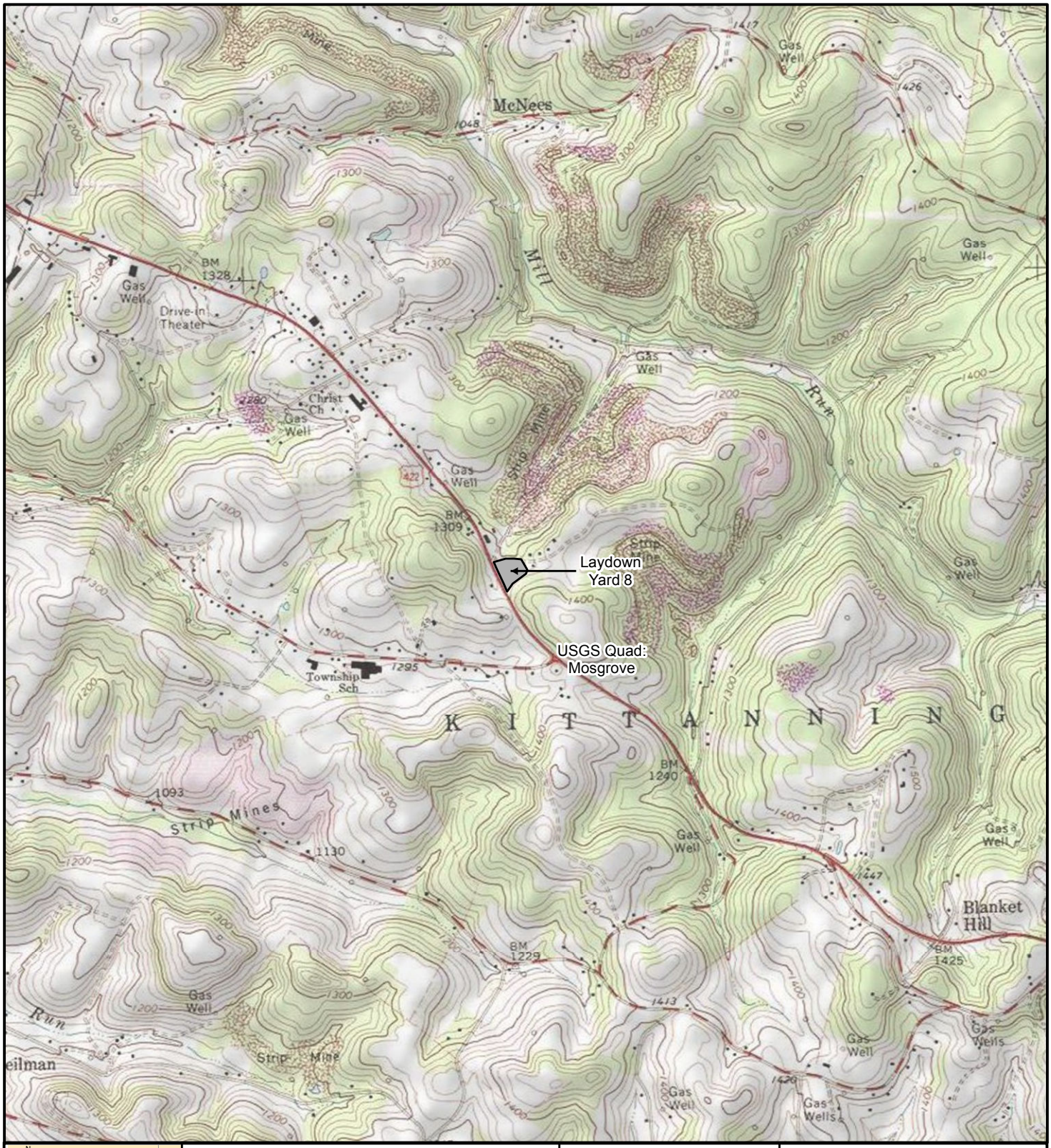
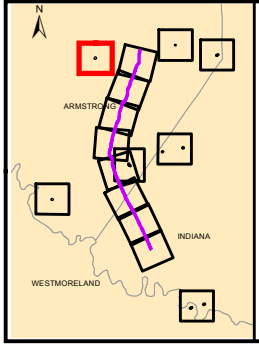
APPENDIX A





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- Replacement Segment
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Miles

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TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

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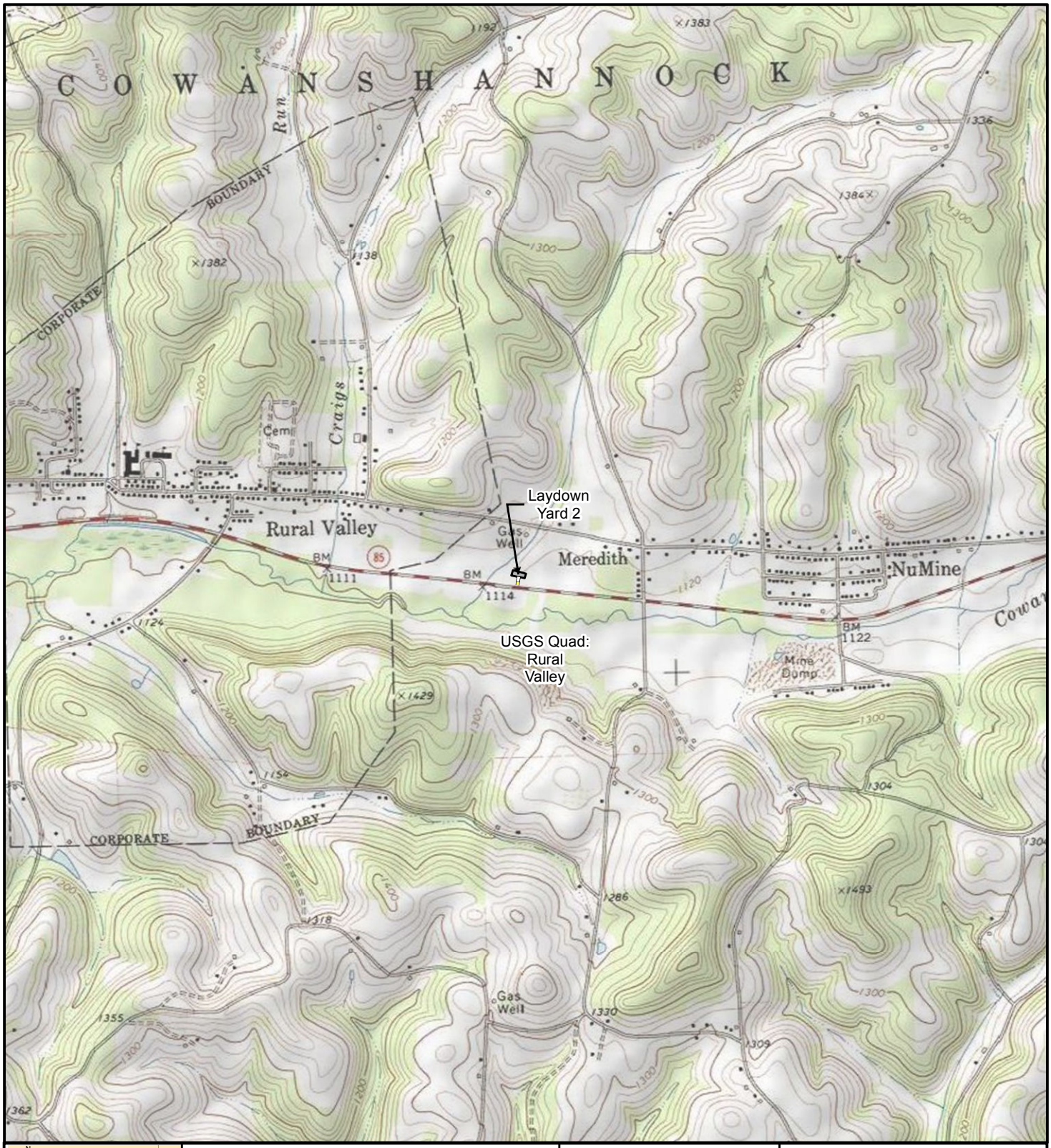
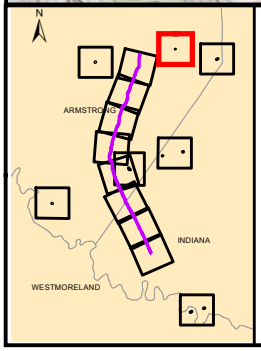
APPENDIX A





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Scale: 1:24,000

Basemap: USGS 1:24000 Series Topographic Quadrangles: Avonmore, McIntyre, Mosgrove, Rural Valley, and Whitesburg

TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

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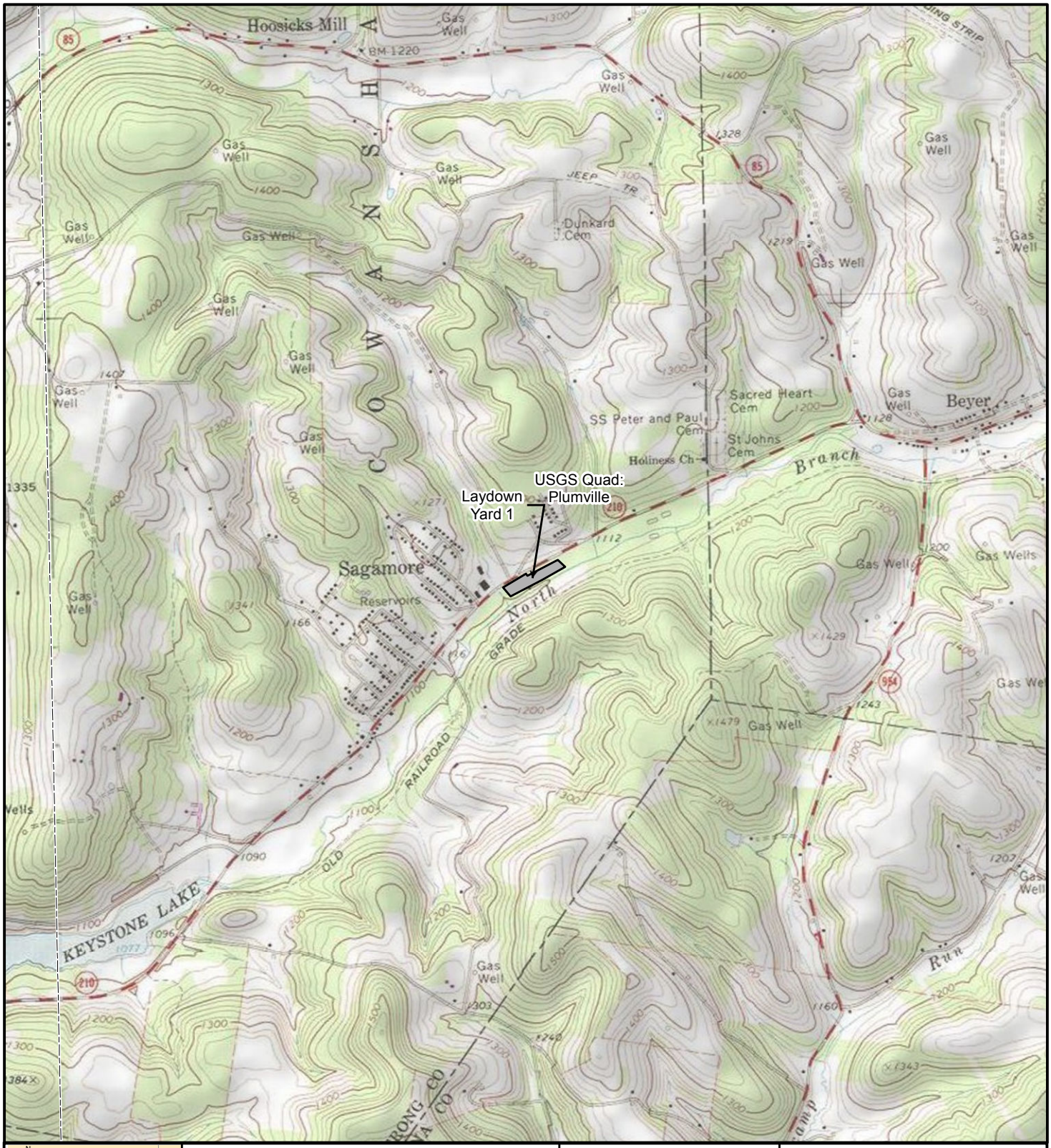
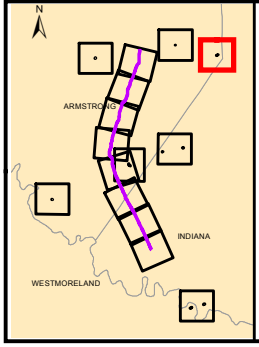
APPENDIX A





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Miles

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TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

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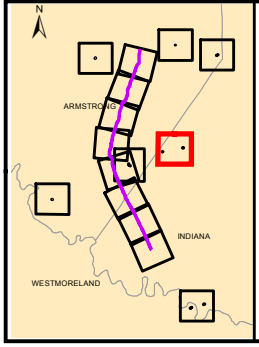
APPENDIX A



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Miles

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TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

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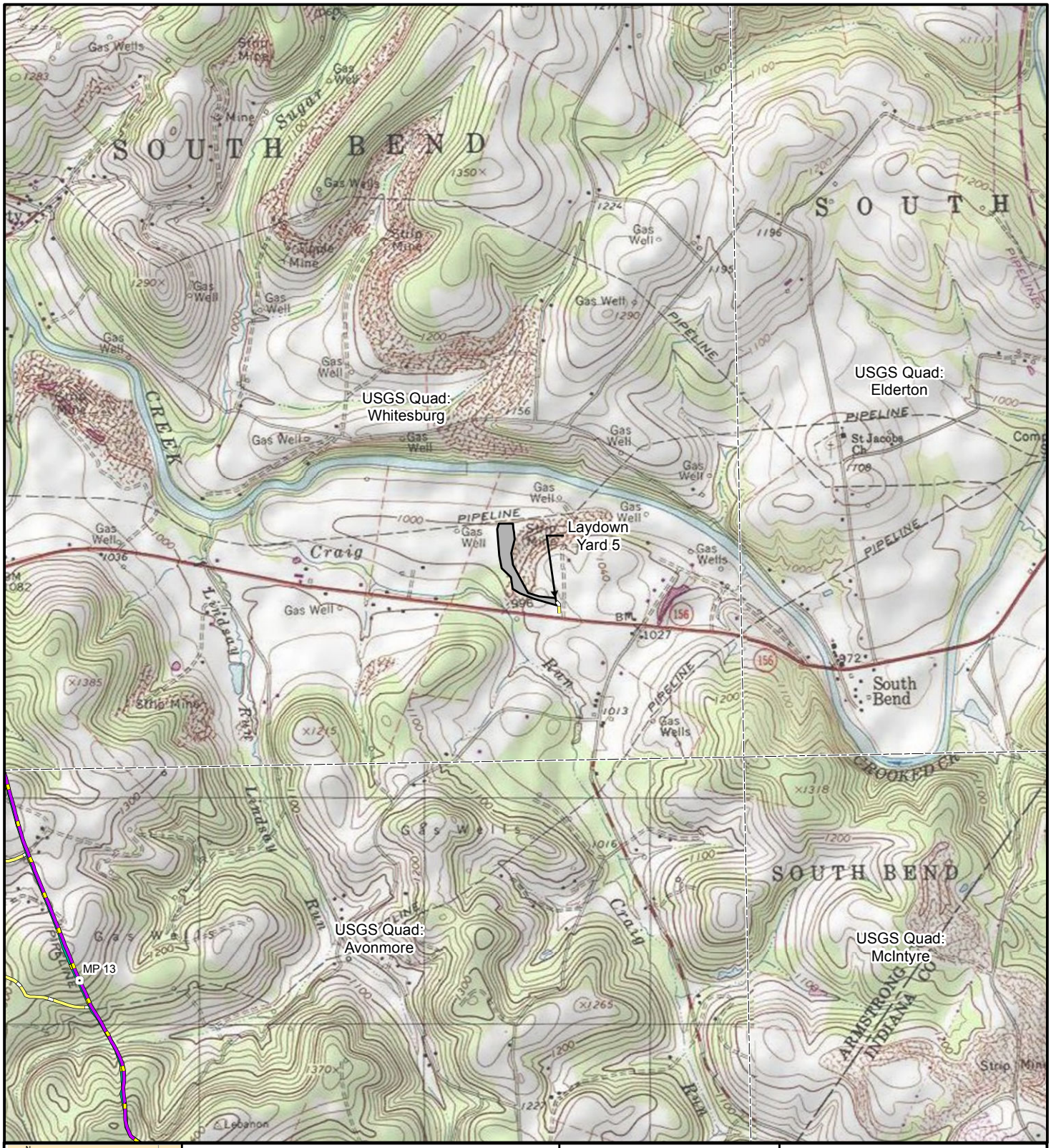
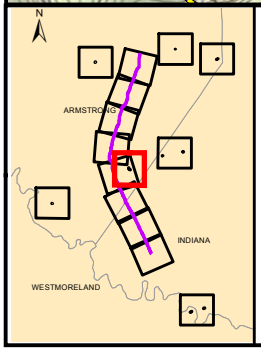
APPENDIX A





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TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

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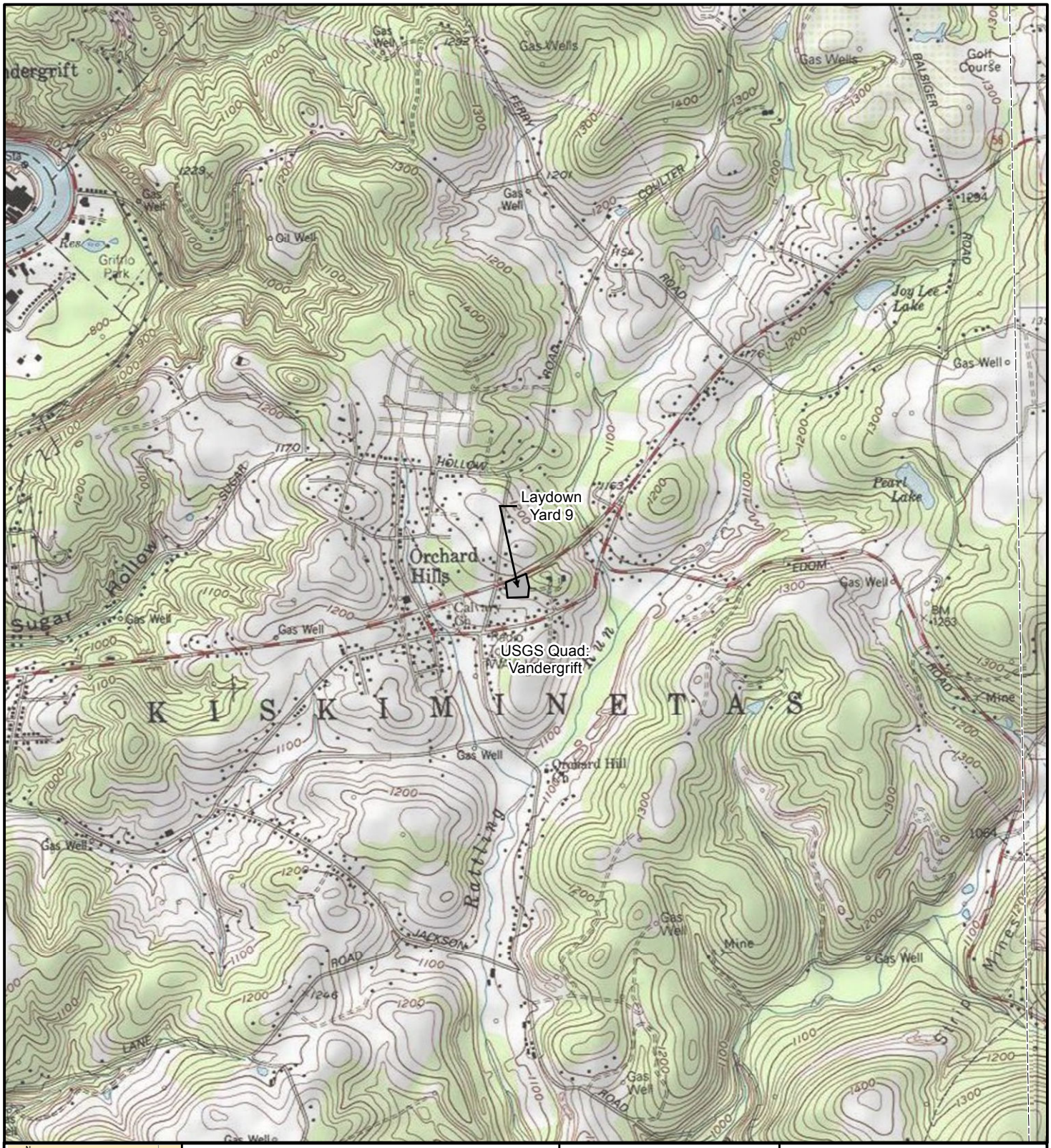
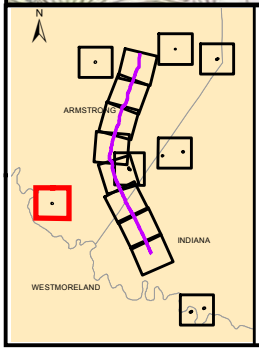
APPENDIX A





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Miles

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TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

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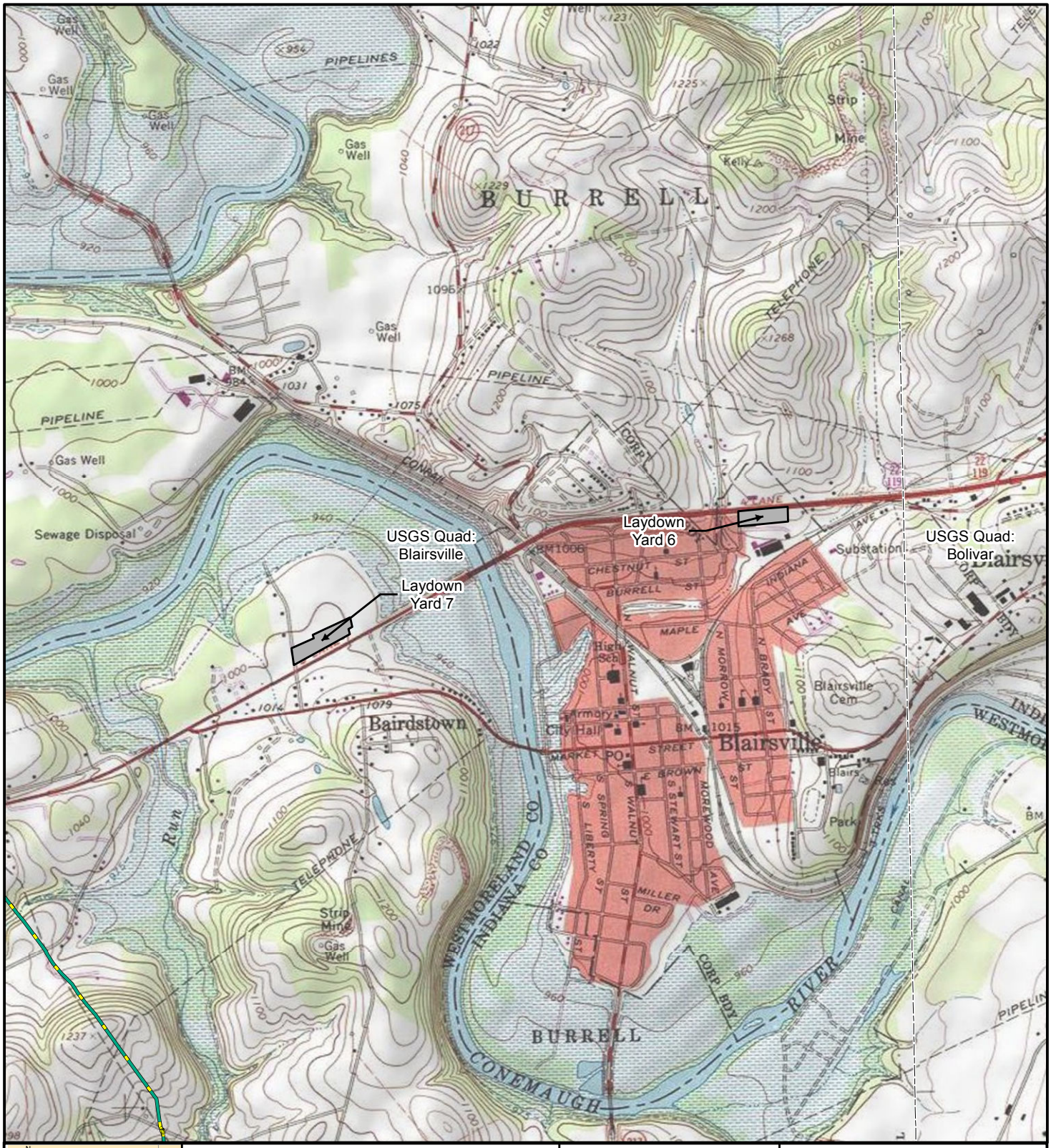
APPENDIX A



TP-371 Pipeline Replacement Project

Pipeline Route and Facilities

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APPENDIX A

APPENDIX B

LOCATION OF ADDITIONAL TEMPORARY WORKSPACES FOR THE TP-371 PROJECT

Appendix B
Location of Additional Temporary Workspace for the TP-371 Project

Facility and County	Project Milepost[a]	ATWS Size (acres)	Land Use Type
Armstrong County			
ATWS-1a	0.0	0.6	Forest/Woodland and Open Land
ATWS-1b	0.0	0.4	Open Land
ATWS-2	0.1	1.4	Agricultural
ATWS-3	0.4	0.4	Forest/Woodland and Open Land
ATWS-4	0.5	0.2	Open Land
ATWS-5	0.5	0.1; <0.1	Forest/Woodland and Open Land; Forest/Woodland
ATWS-92a	0.1	0.1; 0.2	Forest/Woodland; Forest/Woodland
ATWS-91a	0.9	0.2	Open Land and Forest/Woodland
ATWS-6	1.7	<0.1; 0.1	Open Land; Forest/Woodland
ATWS-7	1.7	0.6	Forest/Woodland and Open Land
ATWS-8	2.3	0.2	Forest/Woodland and Open Land
ATWS-9	2.3	0.2	Forest/Woodland
ATWS-10	2.5	0.9	Open Land
ATWS-11	2.5	1.0	Open Land
ATWS-12	2.7	0.2	Forest/Woodland
ATWS-13	3.2	0.2	Open Land
ATWS-14	3.4	0.2	Forest/Woodland
ATWS-15	3.7	0.1	Forest/Woodland and Industrial/Commercial
ATWS-16	3.7	<0.1	Forest/Woodland and Open Land
ATWS-17	3.8	0.1	Forest/Woodland
ATWS-18	3.9	0.2	Forest/Woodland and Open Land
ATWS-19	4.6	0.2	Open Land
ATWS-20	4.7	<0.1	Open Land
ATWS-21	4.7	0.1	Forest/Woodland and Open Land
ATWS-22	4.9	<0.1; 0.2	Open Land and Industrial/Commercial; Forest/Woodland and Open Land
ATWS-23	4.9	0.2	Forest/Woodland
ATWS-81	5.6	<0.1	Forest/Woodland
ATWS-24	5.9	0.2	Forest/Woodland

Appendix B (continued)
Location of Additional Temporary Workspace for the TP-371 Project

Facility and County	Project Milepost[a]	ATWS Size (acres)	Land Use Type
Armstrong County (continued)			
ATWS-88	6.0	0.3	Forest/Woodland, Open Land and Residential
ATWS-89	6.0	0.1	Open Land and Industrial/Commercial
ATWS-25	6.3	0.2	Open Land
ATWS-26	6.5	0.1	Forest/Woodland
ATWS-27	6.6	0.1	Forest/Woodland
ATWS-28	6.9	0.2	Forest/Woodland
ATWS-29	6.9	<0.1	Forest/Woodland
ATWS-30	7.0	0.2	Forest/Woodland
ATWS-83	7.7	0.9	Forest/Woodland
ATWS-31	8.1	0.1	Open Land
ATWS-32	8.2	0.2	Open Land
ATWS-34	8.6	0.7	Open Land
ATWS-33	8.6	0.2	Open Land
ATWS-35	9.2	<0.1	Forest/Woodland
ATWS-36	9.3	0.1	Forest/Woodland and Open Land
ATWS-37	9.6	0.4; 0.2	Open Land; Open Land
ATWS-38	10.2	0.2	Open Land
ATWS-39	10.2	0.1	Forest/Woodland
ATWS-40	10.4	0.1	Forest/Woodland
ATWS-41	10.4	2.5; 2.0; 4.9	Industrial/Commercial; Industrial/Commercial; Industrial/Commercial
ATWS-42	10.8	1.1	Forest/Woodland
ATWS-43	11.1	0.2	Forest/Woodland and Open Land
ATWS-44	11.1	0.4	Forest/Woodland and Agricultural
ATWS-45	11.7	0.3	Forest/Woodland
ATWS-46	11.8	0.2	Forest/Woodland
ATWS-47	11.8	0.2	Forest/Woodland
ATWS-48	12.0	0.6	Forest/Woodland and Open Land
ATWS-49	12.6	0.7	Agricultural
ATWS-50	13.2	0.2	Forest/Woodland
ATWS-51	13.5	0.2	Forest/Woodland
ATWS-54	13.7	0.3	Forest/Woodland

Appendix B (continued)
Location of Additional Temporary Workspace for the TP-371 Project

Facility and County	Project Milepost[a]	ATWS Size (acres)	Land Use Type
Armstrong County (continued)			
ATWS-52	13.7	0.2	Forest/Woodland
ATWS-53	13.7	0.2	Forest/Woodland and Open Land
ATWS-84	13.8	<0.1	Forest/Woodland and Open Land
ATWS-55	13.9	0.1	Forest/Woodland
ATWS-56	14.0	0.3	Forest/Woodland
ATWS-57	14.1	0.3	Agricultural
ATWS-58	14.2	0.1	Agricultural
ATWS-59	14.4	0.3	Forest/Woodland
ATWS-60	15.1	0.1	Open Land
Indiana County			
ATWS-85	15.7	0.1	Agricultural
ATWS-61	15.7	<0.1; 0.1; 0.1; 0.1	Open Land; Agricultural; Open Land and Agricultural; Agricultural
ATWS-62	16.3	0.1	Agricultural
ATWS-63	16.3	<0.1	Agricultural
ATWS-64	16.4	0.3	Agricultural
ATWS-65	16.5	0.1	Agricultural
ATWS-67	17.2	<0.1	Open Land
ATWS-66	17.2	0.2	Forest/Woodland
ATWS-68	17.3	0.2	Forest/Woodland, Industrial/Commercial and Open Land
ATWS-69	17.4	0.2	Forest/Woodland
ATWS-70	17.6	0.1	Forest/Woodland
ATWS-71	17.6	0.1	Forest/Woodland
ATWS-72	18.1	0.6	Agricultural
ATWS-72a	18.1	0.2	Industrial/Commercial and Forest/Woodland
ATWS-73	18.6	1.4	Agricultural
ATWS-74	18.8	0.3	Forest/Woodland
ATWS-75	19.3	0.2	Forest/Woodland
ATWS-76	19.4	0.2	Forest/Woodland
ATWS-77	19.5	0.1	Forest/Woodland
ATWS-78	20.0	0.2	Forest/Woodland
ATWS-79	20.1	0.1	Forest/Woodland and Open Land

Appendix B (continued)
Location of Additional Temporary Workspace for the TP-371 Project

Facility and County	Project Milepost[a]	ATWS Size (acres)	Land Use Type
Indiana County (continued)			
ATWS-80	20.3	0.2	Agricultural
ATWS-86	20.7	0.5; 0.5	Industrial/Commercial; Forest/Woodland and Open Land

[a] Approximate milepost along the pipeline right-of-way.

APPENDIX C

PROPOSED ALTERNATIVE MEASURES TO THE FERC PLAN AND PROCEDURES FOR THE TP-371 PROJECT

Appendix C
Proposed Alternative Measures to the FERC Plan and Procedures for the TP-371 Project

Facility/ Waterbody Name	Approximate Milepost	Wetland/ Waterbody Type[a]	Section in FERC Plan/ Procedures	Deviation Measure	Justification for Deviation	Status
Alternative Measures to the Procedures						
ATWS						
N/A	0.4	PEM	VI.B.1	ATWS within 50 feet	Space limitations due to exit location of HDD-1.	Acceptable
UNT To Huskins Run	1.0	Ephemeral	V.B.2	ATWS within 50 feet	Space limitations due to required equipment access.	Acceptable
UNT To Cherry Run	6.0	Intermittent	V.B.2	ATWS within 50 feet	Space limitations due to exit location of HDD-2.	Acceptable
UNT To Cherry Run	6.0	Intermittent	V.B.2	ATWS within 50 feet	Space limitations due to exit location of HDD-2.	Acceptable
N/A	6.3	PEM	VI.B.1	ATWS within 50 feet	Space limitations due to entry location of HDD-2.	Acceptable
Cherry Run	7.6	Perennial	V.B.2	ATWS within 50 feet	Space limitations due to required equipment access.	Acceptable
Crooked Creek	10.9	Perennial	V.B.2	ATWS within 50 feet	Space limitations due to entry location of HDD-3.	Acceptable
N/A	11.8	PEM/PFO	VI.B.1	ATWS within 50 feet	Space limitations due to topographic constraints, proximity to road.	Acceptable

Appendix C (continued)
Proposed Alternative Measures to the FERC Plan and Procedures for the TP-371 Project

Facility/ Waterbody Name	Approximate Milepost	Wetland/ Waterbody Type[a]	Section in FERC Plan/ Procedures	Deviation Measure	Justification for Deviation	Status
Alternative Measures to the Procedures (continued)						
ATWS (continued)						
Whisky Run and UNT to Whisky Run	13.8	PEM/ Intermittent/ Ephemeral		ATWS within 50 feet	Space limitations due to required equipment access.	Acceptable
Nesbit Run	18.1	Intermittent	V.B.2	ATWS within 50 feet	Space limitations due to required equipment access.	Acceptable
N/A	-	PEM	VI.B.1	ATWS within 50 feet	Wetland within a laydown yard, fencing would be placed around wetland. It would allow Equitrans to avoid use of the public roads when accessing the Project area within and adjacent to the boundary of an existing facility.	Acceptable
Access Roads						
N/A	-	PEM	VI.B.1	Permanent access road within a wetland	Permanent access road AR01PAR would cross a wetland, and would allow Equitrans access to the Project area within the boundary of an existing facility.	Acceptable
N/A	-	PEM	VI.B.1	Temporary access road within a wetland	Temporary access road AR13TAR would cross a wetland. The wetland would be crossed using timber mats and the wetland would be restored to pre-construction conditions following construction.	Acceptable

[a] Wetland classification: PEM - Palustrine Emergent; PFO - Palustrine Forested; and PSS - Palustrine Scrub-Shrub.

APPENDIX D

ACCESS ROADS PROPOSED FOR USE ON THE TP-371 PROJECT

Appendix D
Access Roads Proposed for Use on the TP-371 Project

Access Road No.	Milepost	Construction Status	Temporary or Permanent	Existing Land use	Length	Acreage
Armstrong County						
AR01PAR	0.0	New	Permanent	Industrial/Commercial and Wetland	1,038	0.6
AR39TAR	0.6	Existing	Temporary	Industrial/Commercial	2,304	1.3
AR02TAR	0.9	Existing	Temporary	Industrial/Commercial	1,631	0.9
AR03TAR	1.8	New	Temporary	Industrial/Commercial	344	0.2
AR04TAR	2.6	Existing	Temporary	Industrial/Commercial and Forest/Woodland	228	0.1
AR05TAR	3.0	Existing	Temporary	Industrial/Commercial	350	0.2
AR40TAR	3.2	Existing	Temporary	Industrial/Commercial	193	0.1
AR07TAR	3.4	New	Temporary	Industrial/Commercial and Open Land	185	0.1
AR08TAR	3.9	Existing	Temporary	Industrial/Commercial	264	0.2
AR41PAR	4.3	New	Permanent	Industrial/Commercial	441	0.3
AR42PAR	4.7	Existing	Permanent	Industrial/Commercial	179	0.1
AR09TAR	4.7	New	Temporary	Industrial/Commercial	544	0.3
AR43TAR	5.0	Existing	Temporary	Industrial/Commercial	915	0.5
AR10TAR	5.5	Existing	Temporary	Industrial/Commercial	2,341	1.4
AR47TAR	6.0	Existing	Temporary	Industrial/Commercial	241	0.1
AR11TAR	7.7	Existing	Temporary	Industrial/Commercial	1,998	1.2
AR12TAR	7.9	Existing	Temporary	Industrial/Commercial	2,286	1.3
AR44TAR	8.5	Existing	Temporary	Industrial/Commercial	643	0.4
AR13TAR	9.6	New	Temporary	Industrial/Commercial	849	0.5
AR14TAR	10.2	New	Temporary	Industrial/Commercial	232	0.1
AR15TAR	10.8	New	Temporary	Industrial/Commercial	1,248	0.7
AR17TAR	11.1	New	Temporary	Industrial/Commercial and Forest/Woodland and Open Land	363	0.2
AR16TAR	11.1	New	Temporary	Open Land	257	0.2
AR18TAR	11.4	Existing	Temporary	Industrial/Commercial	1,307	0.8
AR45TAR	11.6	Existing	Temporary	Industrial/Commercial	1,013	0.6
AR45PAR	11.6	New	Permanent	Industrial/Commercial	304	0.2
AR19TAR	11.8	Existing	Temporary	Forest/Woodland and Open Land	255	0.2

Appendix D (continued)
Access Roads Proposed for Use on the TP-371 Project

Access Road No.	Milepost	Construction Status	Temporary or Permanent	Existing Land use	Length	Acreage
Armstrong County (continued)						
AR20TAR	12.0	Existing	Temporary	Industrial/Commercial and Forest/Woodland	1,754	1.0
AR21TAR	12.2	New	Temporary	Industrial/Commercial and Forest/Woodland	1,540	0.9
AR22TAR	12.5	Existing	Temporary	Industrial/Commercial and Forest/Woodland, Agricultural	2,702	1.5
AR23TAR	12.9	Existing	Temporary	Industrial/Commercial and Forest/Woodland	2,837	1.6
AR25TAR	14.3	Existing	Temporary	Industrial/Commercial, Forest/Woodland and Open Land	1,206	0.7
AR49TAR	Yard 2	Existing	Temporary	Industrial/Commercial	124	0.1
AR50TAR	Yard 5	Existing	Temporary	Industrial/Commercial	186	0.1
Indiana County						
AR26TAR	15.6	Existing	Temporary	Industrial/Commercial	1,404	0.8
AR27TAR	15.7	Existing	Temporary	Industrial/Commercial	487	0.3
AR28TAR	16.4	New	Temporary	Agricultural	140	0.1
AR29/48TAR	17.2	Existing	Temporary	Industrial/Commercial and Forest/Woodland	7,111	4.1
AR30PAR	18.1	Existing	Permanent	Industrial/Commercial	735	0.4
AR46TAR	18.7	Existing	Temporary	Agricultural	32	<0.1
AR31TAR	18.8	Existing	Temporary	Industrial/Commercial	1,464	0.8
AR32TAR	19.3	Existing	Temporary	Industrial/Commercial	1,968	1.1
AR33TAR	19.5	Existing	Temporary	Industrial/Commercial	2,406	1.4
AR34TAR	19.9	Existing	Temporary	Industrial/Commercial	470	0.3
AR35TAR	20.2	Existing	Temporary	Industrial/Commercial	985	0.6
AR36TAR	20.3	Existing	Temporary	Industrial/Commercial	1,930	1.1
AR37PAR	20.7	Existing	Permanent	Industrial/Commercial	187	0.1
Total[a]					**9.8 miles**	**29.6**

[a] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends.

APPENDIX E

FOREIGN UTILITIES AND PIPELINES CROSSED BY THE TP-371 PROJECT

Appendix E
Foreign Utilities and Pipelines Crossed by the TP-371 Project

Pipeline Milepost	Utility Type
Armstrong County	
0.2	12-inch PNG GP-308
0.2	12-inch PNG GP-301
0.3	TWP gas line
0.3	PNG gas line
0.4	UP UG WPP CO
0.5	PNG gas line
0.5	Equitrans gas line
0.3	Equitable gas line
0.5	PNG gas line
0.6	Unknown gas line
0.7	TWP gas line
1.8	XTO Energy gas line
2.0	Existing Segment, TP-371 gas line
2.1	Existing Segment, TP-371 gas line
2.1	Unknown gas line
2.3	Equitable gas line
2.3	PNG gas line
2.3	26-inch Dominion Transmission gas line
2.3	PNG gas line
2.3	Alltel overhead
2.5	Equitable gas line
2.6	4-inch TW Phillips gas line
2.6	4-inch TW Phillips gas line
2.6	Peoples TWP gas line
2.6	Equitable gas line
3.5	Equitable gas line
3.7	Equitable gas line
3.9	Unknown overhead utility
3.9	2-inch TWP gas line
4.3	TW Phillips gas line and meter
4.5	Equitable gas line
4.6	3-inch Equitrans gas line
4.9	2-inch EXCO gas line

Appendix E (continued)
Foreign Utilities and Pipelines Crossed by the TP-371 Project

Pipeline Milepost	Utility Type
Armstrong County (continued)	
5.4	Unknown gas line
5.5	Possible Equitable gas line
6.5	Unknown gas line
6.9	8-inch Equitable (NITE 5001) gas line
6.9	12-inch TW Phillips gas line
7.1	8-inch Equitable (F-189) gas line
7.1	Unknown gas line
7.2	Buried cable
7.4	10-inch wastewater line
7.5	Equitable gas line
7.7	Unknown gas line
7.7	Unknown gas line
7.4	Existing Segment, TP-371 gas line
8.4	2-inch EXCO gas line
8.6	Equitable gas line
10.1	Equitrans gas line
10.4	Alltel overhead
10.4	Dominion Transmission gas line
10.5	Possible Dominion gas line
10.5	6-inch gas from Girty Station
10.6	2-inch PNG GP-1029 gas line
10.7	6-inch gas from Girty Station
11.1	Underground telephone line
11.6	20-inch Dominion Transmission LN-26
11.6	26-inch Dominion Transmission L-380
11.8	Overhead electrical power
11.9	2-inch Penn gas line
11.2	2-inch Penn gas line
12.3	Dominion gas line
12.3	Overhead electrical power
12.6	FNC electric
12.7	Dominion Transmission KP-59 GAS
13.1	Dominion Transmission GAS
13.1	3-inch Penn gas line

Appendix E (continued)
Foreign Utilities and Pipelines Crossed by the TP-371 Project

Pipeline Milepost	Utility Type
Armstrong County (continued)	
13.3	8-inch PNG GP-7542 gas line
13.5	8-inch PNG GP-5646 GS LINE
13.5	8-inch PNG GP-7542 gas line
13.7	10-inch Columbia gas line
14.5	CNX gas line
14.8	CNX gas line
14.8	Dominion gas line
14.8	Water line
15.1	12-inch PNG GP-7542 gas line
15.1	Overhead electrical power
15.1	8-inch PNG GP-7542 gas line
Indiana County	
15.3	PDC gas line
15.7	CNX gas line
15.8	Consol gas line
15.8	Consol gas line
15.8	Overhead electrical power
15.8	CNX gas line
15.8	8-inch TWP gas line
15.9	Existing Segment, TP-371 gas line
15.9	8-inch PNG gas line
16.3	Dominion GP7542 gas line
16.4	CNX gas line
16.5	PDC gas line
17.3	CNX gas line
17.4	CNX gas line
17.8	CNX PL 243 and TWP valves
17.9	2-inch EXCO gas line
18.1	Consol gas line
18.1	Peoples TWP gas line
18.5	4-inch PNG GP-8141 gas line
16.6	2-inch PNG GP-7797 gas line
18.7	2-inch TWP gas line and valves
19.0	Unknown gas line

Appendix E (continued)
Foreign Utilities and Pipelines Crossed by the TP-371 Project

Pipeline Milepost	Utility Type
Indiana County (continued)	
19.3	2-inch PNG GP-8605 gas line
19.4	2-inch PNG GP-8728 gas line
19.7	24-inch Nisource gas line
19.7	2-inch TWP gas line
20.0	2-inch TWP gas line and anode bed
20.1	2-inch TWP gas line
20.2	TWP gas line

APPENDIX F

WATERBODIES CROSSED BY THE TP-371 PROJECT

Appendix F
Waterbodies Crossed by the TP-371 Project

Waterbody ID	Waterbody Name	Approximate Milepost[a]	Flow Type	Approximate Crossing Width (feet)	Designated Use[b]	PFBC Trout Water Classification[c]	Proposed Construction Method[d]	Proposed Crossing Window
Armstrong County								
PA-AR-MKJN-S-001	Huskins Run	0.1	Perennial	10	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-MKJN-S-001	Huskins Run	0.1	Perennial	10	WWF	N/A	HDD	June 1 – November 30
PA-AR-MKJN-S-024	UNT to Huskins Run	0.4	Perennial	6	WWF	N/A	HDD	June 1 – November 30
PA-AR-LBJF-S-027	UNT to Huskins Run	AR02TAR/ ATWS-91	Ephemeral	3	WWF	N/A	Span Mat Bridge	June 1 – November 30
PA-AR-MKJN-S-023	UNT to Huskins Run	1.6	Ephemeral	1.5	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-LBJF-S-028	UNT to Huskins Run	AR03TAR	Intermittent	1	WWF	N/A	Span Mat Bridge	June 1 – November 30
PA-AR-MKJN-S-025	UNT to Cherry Run	3.0	Ephemeral	1.5	CWF	N/A	HDD	June 1 – September 30
PA-AR-MKJN-S-002	UNT to Cherry Run	2.6 – 3.1[e]	Perennial	7	CWF	N/A	HDD	June 1 – September 30
PA-AR-MKJN-S-002	UNT to Cherry Run	3.4	Perennial	7	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-MKJN-S-008	UNT to Cherry Run	TWS-3.5	Ephemeral	4	CWF	N/A	Span Mat Bridge	June 1 – September 30
PA-AR-MKJN-S-009	UNT to Cherry Run	3.7	Ephemeral	2	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-MKJN-S-010	UNT to Cherry Run	3.9	Ephemeral	1	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30

Appendix F (continued)
Waterbodies Crossed by the TP-371 Project

Waterbody ID	Waterbody Name	Approximate Milepost[a]	Flow Type	Approximate Crossing Width (feet)	Designated Use[b]	PFBC Trout Water Classification[c]	Proposed Construction Method[d]	Proposed Crossing Window
Armstrong County (continued)								
PA-AR-MKJN-S-011	UNT to Cherry Run	4.65	Perennial	7	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-MKJN-S-013	UNT to Cherry Run	4.7 AR42PAR	Ephemeral	2	CWF	N/A	Open Cut Culvert/Span Mat Bridge	June 1 – September 30
PA-AR-MKJN-S-014	UNT to Cherry Run	5.0	Intermittent	2.5	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-MKJN-S-017	UNT to Cherry Run	5.6	Perennial	6	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-MKJN-S-018	UNT to Cherry Run	6.0 ATWS-89	Intermittent	4	CWF	N/A	HDD/ Span Mat Bridge	June 1 – September 30
PA-AR-MKJN-S-020	UNT to Cherry Run	6.6	Intermittent	4	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-MKJN-S-021	Cherry Run	6.9	Perennial	20	CWF	Approved Trout Water	Open Cut/Span Mat Bridge	June 16 – February 28
PA-AR-MKJN-S-022	UNT to Cherry Run	TWS-6.9	Perennial	6	CWF	N/A	Span Mat Bridge	June 1 – September 30
PA-AR-LBJF-S-001	UNT to Cherry Run	7.0	Intermittent	2	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-LBJF-S-003	Fagley Run	7.2	Perennial	5	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-LBJF-S-004	UNT to Cherry Run	7.3	Perennial	3	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30

Appendix F (continued)
Waterbodies Crossed by the TP-371 Project

Waterbody ID	Waterbody Name	Approximate Milepost[a]	Flow Type	Approximate Crossing Width (feet)	Designated Use[b]	PFBC Trout Water Classification[c]	Proposed Construction Method[d]	Proposed Crossing Window
Armstrong County (continued)								
PA-AR-MKLB-S-002	UNT to Cherry Run	AR12TAR	Ephemeral	1.5	CWF	N/A	Span Mat Bridge	June 1 – September 30
PA-AR-MKLB-S-004	Cherry Run	ATWS-83	Perennial	20	CWF	Approved Trout Water	Span Mat Bridge	June 16 – February 28
PA-AR-LBJF-S-005	UNT to Cherry Run	TWS-7.8	Intermittent	4	CWF	N/A	Span Mat Bridge	June 1 – September 30
PA-AR-LBJF-S-006	UNT to Cherry Run	7.9	Perennial	8	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-LBJF-S-008	UNT to Cherry Run	7.9	Intermittent	1	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-LBJF-S-007	UNT to Cherry Run	7.9	Intermittent	1	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-LBJF-S-021	UNT to Cherry Run	8.2	Intermittent	1	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-MKAS-S-001	Long Run	9.3	Perennial	3.5	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-LBJF-S-030	Long Run	AR13TAR	Perennial	2	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-MKAS-S-003	Fagley Run	10.2	Perennial	7.5	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-MKAS-S-004	UNT to Fagley Run	TWS-10.3	Ephemeral	3	WWF	N/A	Span Mat Bridge	June 1 – November 30
PA-AR-MKAS-S-006	Crooked Creek	10.9	Perennial	95	WWF	N/A	HDD	June 1 – November 30

Appendix F (continued)
Waterbodies Crossed by the TP-371 Project

Waterbody ID	Waterbody Name	Approximate Milepost[a]	Flow Type	Approximate Crossing Width (feet)	Designated Use[b]	PFBC Trout Water Classification[c]	Proposed Construction Method[d]	Proposed Crossing Window
Armstrong County (continued)								
PA-AR-MKAS-S-005	UNT to Crooked Creek	11.0	Intermittent	6	WWF	N/A	HDD	June 1 – November 30
PA-AR-LBJF-S-010	UNT to Crooked Creek	11.7	Perennial	10	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-LBJF-S-011	UNT to Crooked Creek	11.8	Intermittent	1	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-LBJF-S-012	UNT to Crooked Creek	12.2	Intermittent	3	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-LBJF-S-014	UNT to Crooked Creek	12.2	Intermittent	1	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-LBJF-S-013	UNT to Crooked Creek	12.2	Perennial	8	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-LBJF-S-016	UNT to Crooked Creek	12.3	Intermittent	1	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-MKLB-S-001	UNT to Crooked Creek	AR23TAR	Intermittent	3.5	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-LBJF-S-018	UNT to Crooked Creek	13.2	Perennial	5	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30

Appendix F (continued)
Waterbodies Crossed by the TP-371 Project

Waterbody ID	Waterbody Name	Approximate Milepost[a]	Flow Type	Approximate Crossing Width (feet)	Designated Use[b]	PFBC Trout Water Classification[c]	Proposed Construction Method[d]	Proposed Crossing Window
Armstrong County (continued)								
PA-AR-LBJF-S-020	UNT to Crooked Creek	13.2	Ephemeral	1.5	WWF	N/A	Open Cut/Span Mat Bridge	June 1 – November 30
PA-AR-MKAS-S-007	UNT to Whisky Run	TWS-13.8	Ephemeral	1.5	CWF	N/A	Span Mat Bridge	June 1 – September 30
PA-AR-MKAS-S-008	Whisky Run	13.9	Intermittent	4	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-MKAS-S-009	UNT to Whisky Run	14.2	Intermittent	5	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-MKJG-S-001	Whisky Run	Groundbed 2 (Beagle Club Road)	Perennial	4	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-MKAS-S-010	UNT to Whisky Run	14.2	Intermittent	4	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-AR-MKAS-OW-002[f]	Unnamed Pond	14.8	Open water	N/A	N/A	N/A	N/A	N/A
Indiana County								
PA-IN-LBJF-OW-001[g]	Unnamed Pond	15.2	Open water	N/A	N/A	N/A	N/A	N/A
PA-IN-MKLB-S-001	UNT TO Whisky Run	15.3	Intermittent	2.5	CWF	N/A	Open Cut/ Span Mat Bridge	June 1 – September 30

Appendix F (continued)
Waterbodies Crossed by the TP-371 Project

Waterbody ID	Waterbody Name	Approximate Milepost[a]	Flow Type	Approximate Crossing Width (feet)	Designated Use[b]	PFBC Trout Water Classification[c]	Proposed Construction Method[d]	Proposed Crossing Window
Indiana County (continued)								
PA-IN-MKLB-S-002	UNT to Whisky Run	15.3	Ephemeral	1	CWF	N/A	Span Mat Bridge	June 1 – September 30
PA-IN-MKLB-S-003	UNT to Whisky Run	15.3	Ephemeral	2	CWF	N/A	Span Mat Bridge	June 1 – September 30
PA-IN-LBJF-S-002[g]	UNT to Whisky Run	15.3	Ephemeral	3	N/A	N/A	N/A	N/A
PA-IN-MKAS-S-001	Nesbit Run	17.2	Perennial	8	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-IN-MKAS-S-002	UNT to Nesbit Run	17.2	Intermittent	4	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-IN-MKAS-S-003	UNT to Nesbit Run	17.6	Ephemeral	1	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-IN-MKJG-S-001	UNT to Nesbit Run	ATWS-72a	Intermittent	3	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-IN-LBJF-S-003	Nesbit Run	18.2	Perennial	7	CWF	N/A	HDD	June 1 – September 30
PA-IN-LBJF-S-003	Nesbit Run	18.3	Perennial	7	CWF	N/A	HDD	June 1 – September 30
PA-IN-LBJF-S-005	Blacklegs Creek	18.4	Perennial	40	CWF	Approved Trout Water	HDD	June 16 – February 28
PA-IN-MKAS-S-009	UNT to Marshall Run	19.35	Intermittent	5.5	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30
PA-IN-MKAS-S-008	UNT to Marshall Run	19.4	Ephemeral	2	CWF	N/A	Open Cut/Span Mat Bridge	June 1 – September 30

Appendix F (continued)
Waterbodies Crossed by the TP-371 Project

Waterbody ID	Waterbody Name	Approximate Milepost[a]	Flow Type	Approximate Crossing Width (feet)	Designated Use[b]	PFBC Trout Water Classification[c]	Proposed Construction Method[d]	Proposed Crossing Window
Indiana County (continued)								
PA-IN-MKAS-S-007	UNT to Marshall Run	20.0	Intermittent	3.5	CWF	N/A	Bore/Span Mat Bridge	June 1 – September 30
PA-IN-MKAS-S-006	Marshall Run	20.0	Perennial	8.5	CWF	N/A	Bore/Span Mat Bridge	June 1 – September 30
PA-IN-MKAS-S-005	UNT to Marshall Run	20.1	Ephemeral	3	CWF	N/A	Span Mat Bridge	June 1 – September 30

[a] When a stream was identified in an area outside of the pipeline construction corridor, such as laydown yards, access roads, and other additional temporary workspaces, the name of the workspace or access road is listed instead of the approximate milepost.

[b] Designations are per PA Code Chapter 93. Coldwater fisheries (CWF) - Maintenance or propagation, or both, of fish species including the family Salmonidae and additional flora and fauna which are indigenous to a cold water habitat; warmwater fisheries (WWF) - Maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.

[c] Approved Trout Waters – This PFBC designation for streams means that these waters contain significant portions that are open to public fishing and are stocked with trout.

[d] With the exception of waterbodies crossed by the HDD, Equitrans is proposing conducting crossings using dry-ditch methods, either dam and pump or flume. Access road crossings would be conducted using timber mat(s) or a span bridge. Waterbodies located in workspace that would not be crossed by the pipeline centerline would be crossed using timber mat(s) or FERC-approved equal measures.

[e] Multiple crossings within this milepost range.

[f] The waterbody is within the construction right-of-way but would be avoided by Project construction activities.

[g] The waterbody is within the right-of-way for the Existing Segment, but is not within construction workspace for the Replacement Segment.

APPENDIX G

WETLANDS CROSSED BY THE TP-371 PROJECT

Appendix G
Wetlands Crossed by the TP-371 Project[a,b]

Facility/ Wetland ID	Milepost or Facility	NWI Classification[c]	Crossing Length (feet)	Area Affected by Construction (acres)[d]	Area Affected by Operation (acres)
Armstrong County					
PA-AR-MKAS-W-011	AR01PAR	PEM	25.5	<0.1	<0.1
PA-AR-MKAS-W-012	AR01PAR	PEM	30.4	<0.1	<0.1
PA-AR-MKAS-W-010	AR01PAR	PEM	5.4	<0.1	<0.1
PA-AR-MKAS-W-015	0.3	PEM	0.0	0.0	0.0
PA-AR-MKAS-W-016	0.4	PEM	0.0	0.0	0.0
PA-AR-LBJF-W-015	ATWS-3	PEM	118.1	0.1	0.0
PA-AR-MKJN-W-014	1.7	PEM	628.8	0.5	0.0
PA-AR-MKJN-W-002	2.3	PEM/PSS	453.4	0.3	0.0
PA-AR-MKJN-W-003	2.6	PEM	0.0	0.0	0.0
PA-AR-MKJN-W-004	2.7	PEM	0.0	0.0	0.0
PA-AR-MKJN-W-015	3.0	PEM	0.0	0.0	0.0
PA-AR-MKJN-W-007	3.3	PEM	289.7	0.1	0.0
PA-AR-MKJN-W-008	3.6	PEM	142.5	0.1	0.0
PA-AR-MKJN-W-009	3.7	PEM	18.6	<0.1	0.0
PA-AR-MKJN-W-010	4.4	PEM	59.1	<0.1	0.0
PA-AR-MKJN-W-011	4.6	PEM	123.6	<0.1	0.0
PA-AR-MKJN-W-013	6.3/ATWS-25	PEM	177.8	0.2	0.0
PA-AR-LBJF-W-001	7.0	PEM	99.2	0.1	0.0
PA-AR-LBJF-W-004	7.2	PEM/PSS	52.4	<0.1	0.0
PA-AR-LBJF-W-003	7.2	PEM	218.8	0.1	0.0
PA-AR-LBJF-W-005	7.3	PEM	64.3	<0.1	0.0
PA-AR-LBJF-W-006	7.9	PEM	178.1	0.2	0.0
PA-AR-LBJF-W-011	8.2	PEM	186.0	0.2	0.0
PA-AR-LBJF-W-012	8.3	PEM	114.9	0.1	0.0
PA-AR-MKAS-W-001	9.3	PEM	194.3	0.3	0.0
PA-AR-MKAS-W-002	9.4	PEM	123.0	0.1	0.0
PA-AR-MKAS-W-003	9.4	PEM	172.1	0.1	0.0
PA-AR-LBJF-W-016	AR13TAR	PEM	141.3	0.1	0.0
PA-AR-MKAS-W-004	TWS-9.9	PEM	20.9	<0.1	0.0

Appendix G (continued)
Wetlands Crossed by the TP-371 Project[a,b]

Facility/ Wetland ID	Milepost or Facility	NWI Classification[c]	Crossing Length (feet)	Area Affected by Construction (acres)[d]	Area Affected by Operation (acres)
Armstrong County (continued)					
PA-AR-MKAS-W-005	10.3	PEM	29.1	<0.1	0.0
PA-AR-LBJF-W-007	11.8	PEM/PFO	253.4	0.1	<0.1
PA-AR-LBJF-W-008	11.9	PEM	56.6	<0.1	0.0
PA-AR-LBJF-W-009	12.2	PEM	149.8	0.1	0.0
PA-AR-LBJF-W-010	13.2	PEM	72.3	<0.1	0.0
PA-AR-MKAS-W-006	13.8/ATWS-84	PEM	434.4	0.3	0.0
PA-AR-MKAS-W-008	14.7	PEM	168.5	0.1	0.0
Indiana County					
PA-IN-LBJF-W-001	TWS-15.2	PEM	60.2	<0.1	0.0
PA-IN-MKAS-W-001	17.6	PEM	25.6	<0.1	0.0
PA-IN-LBJF-W-002a/b	18.2	PEM	0.0	0.0	0.0
PA-IN-LBJF-W-005a	18.3	PSS/PFO	0.0	0.0	0.0
PA-IN-LBJF-W-005b	18.3	PSS/PFO	0.0	0.0	0.0
PA-IN-LBJF-W-006	18.5	PEM	92.9	0.1	0.0
PA-IN-LBJF-W-007	18.7	PEM	0.0	0.0	0.0
PA-IN-MKAS-W-004	19.5	PEM	41.7	<0.1	0.0
PA-IN-MKAS-W-003	20.1	PEM	33.0	<0.1	0.0
Westmoreland County					
PA-WE-LBJF-W-0014[e]	Laydown Yard 7	PEM	85.9	0.0	0.0
		Totals		**3.5**	**<0.1**

[a] This table includes all wetland impacts for the Project. Facilities not listed do not impact wetlands.

[b] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends.

[c] NWI classification: PEM - Palustrine Emergent; PFO - Palustrine Forested; and PSS - Palustrine Scrub-Shrub.

[d] A construction impact of 0.0 acre indicates a wetland within the path of the HDD.

[e] This wetland would be within a laydown yard but would be fenced off from construction activities so that impacts would be avoided.

Document Content(s)