EQUITRANS

Equitrans Expansion Project

Docket No. PF15-22

Draft Resource Report 3 – Fisheries, Vegetation, and Wildlife

Draft

July 2015

Equitrans Expansion Project
Draft Resource Report 3 – Fisheries, Vegetation, and Wildlife

Resource Report 3 Filing Requirements	
Information	**Location in Resource Report**
Minimum Filing Requirements	
1. Classify the fishery type of each surface waterbody that would be crossed, including fisheries of special concern. (§ 380.12(e)(1)) This includes commercial and sport fisheries as well as coldwater and warmwater fishery designations and associated significant habitat.	Sections 3.1.1, 3.1.2, and 3.1.3
2. Describe terrestrial and wetland wildlife and habitats that would be affected by the project. (§ 380.12(e)(2)) Describe typical species with commercial, recreational or aesthetic value.	Sections 3.1.2.2, 3.1.2.3, 3.1.2.4, and 3.2
3. Describe the major vegetative cover types that would be crossed and provide the acreage of each vegetative cover type that would be affected by construction. (§ 380.12(e)(3)) • Include unique species or individuals and species of special concern. • Include nearshore habitats of concern.	Sections 3.2, 3.3.2, and 3.4
4. Describe the effects of construction and operation procedures on the fishery resources and proposed mitigation measures. (§ 380.12(e)(4)) Be sure to include offshore effects, as needed.	Section 3.1.4
5. Evaluate the potential for short-term, long-term, and permanent impact on the wildlife resources and state-listed endangered or threatened species caused by construction and operation of the project and proposed mitigation measures. (§ 380.12(e)(4))	Sections 3.4.5
6. Identify all federally listed or proposed endangered or threatened species that potentially occur in the vicinity of the project and discuss the results of the consultations with other agencies. Include survey reports as specified in (§ 380.12(e)(5)). See § 380.13(b) for consultation requirements. Any surveys required through § 380.13(b)(5)(I) must have been conducted and the results included in the application.	Section 3.4
7. Identify all federally listed essential fish habitat (EFH) that potentially occurs in the vicinity of the project and the results of abbreviated consultations with NMFS, and any resulting EFH assessment. (§ 380.12(e)(6))	Section 3.1.2.1
8. Describe any significant biological resources that would be affected. Describe impact and any mitigation proposed to avoid or minimize that impact. (§ 380.12(e)(4&7)) For offshore species be sure to include effects of sedimentation, changes to substrate, effects of blasting, etc. This information is needed on a mile-by-mile basis and will require completion of geophysical and other surveys before filing.	Sections 3.1.4, 3.2.9, and 3.4.5
Additional Information	
Provide copies of correspondence from federal and state fish and wildlife agencies along with responses to their recommendations to avoid or limit impact on wildlife, fisheries, and vegetation.	Resource Report 1 Appendix 1A
Provide a list of significant wildlife habitats crossed by the project. Specify locations by milepost, and include length and width of crossing at each significant wildlife habitat.	Sections 3.2.8 and 3.3.2

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	degree Fahrenheit
ATWS	additional temporary workspace
BCC	Bird of Conservation Concern
BCR	Bird Conservation Region
BMP	best management practice
CFR	Code of Federal Regulations
E&SCP	Erosion and Sediment Control Plan
Eagle Act	Bald and Golden Eagle Protection Act of 1940
EFH	essential fish habitat
Equitrans	Equitrans, L.P.
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FR	Federal Register
G	global status
H	possibly extinct
HUC	Hydrologic Unit Code
HDD	horizontal directional drilling
IBA	Important Bird Area
IPaC	Information, Planning, and Conservation (USFWS)
MBTA	Migratory Bird Treaty Act
MVP	Mountain Valley Pipeline
N	no current legal status exists, but is under review
NLCD	National Land Cover Database
NMFS	National Oceanic and Atmospheric Administration National Marine Fisheries Service
NWI	National Wetlands Inventory
Pa. C.S.A.	Pennsylvania Consolidated Statutes Annotated
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PANHP	Pennsylvania Natural Heritage Program
PE	Pennsylvania Endangered
PFBC	Pennsylvania Fish and Boat Commission
PGC	Pennsylvania Game Commission
Plan	FERC's May 2013 version of the *Upland Erosion Control, Revegetation, and Maintenance Plan*
PR	Pennsylvania Rare
Procedure	FERC's May 2013 version of the *Wetland and Waterbody Construction and Mitigation Procedures*
Project	Equitrans Expansion Project
PT	Pennsylvania Threatened
PV	Pennsylvania Vulnerable

PX	Pennsylvania Extirpated
S	state status
SPCC Plan	Spill Prevention, Containment, and Countermeasure Plan
TU	Tentatively Undetermined
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USDA	United States Department of Agriculture
WNS	white-nose syndrome
WVDNR	West Virginia Division of Natural Resources
X	extinct or extirpated species

DRAFT RESOURCE REPORT 3
FISHERIES, VEGETATION, AND WILDLIFE

Introduction

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

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

Environmental Resource Report Organization

Resource Report 3 is prepared and organized according to the FERC *Guidance Manual for Environmental Report Preparation* (August 2002). This report is organized into four major sections and a separate section listing the sources used to prepare this report. Section 3.1 describes fisheries; Section 3.2 describes vegetation; Section 3.3 addresses wildlife; Section 3.4 addresses endangered, threatened, and special concern wildlife; and Section 3.5 provides a list of references cited in this report.

3.1 FISHERY RESOURCES

Equitrans has initiated correspondence with the United States Fish and Wildlife Service (USFWS) Pennsylvania Field Office, Pennsylvania Game Commission (PGC), Pennsylvania Fish and Boat Commission (PFBC), Pennsylvania Department of Conservation and Natural Resources (PADCNR), and West Virginia Division of Natural Resources (WVDNR) to identify fishery resources in the Project area.

3.1.1 Fisheries Habitat Classification

A fishery is generically defined as a system in which the aquatic biota, aquatic habitat, and human users of these renewable resources interact and influence the system's performance (Lackey 2005). Surface water areas provide suitable habitat for fishes and are categorized according to water temperature (warmwater or coldwater), salinity (freshwater, marine, or estuarine), fish harvest (commercial or recreational), upstream

areas for spawning marine fishes (anadromous species), and migration routes from freshwater to marine waters for reproduction (catadromous species). The FERC defines significant fishery resources as waterbodies that either (1) provide important habitat for foraging, rearing, or spawning; (2) represent important commercial or recreational fishing areas; or (3) support large populations of commercially or recreationally valuable fish species or fish species that are protected at the federal, state, or local level.

Freshwater systems have low salinity and contain fisheries that are typically classified as either warmwater or coldwater. This designation is dependent upon the dominant species of fish (and prey items) occupying the waterbody. Warmwater fisheries are defined as capable of supporting fish able to tolerate water temperatures above 80 degrees Fahrenheit (°F) including gamefish species such as sunfish (Centrarchidae) and catfish (Ictaluridae). Coldwater fisheries are defined as waters capable of supporting year-round populations of coldwater aquatic life such as trout and their associated foraging communities (e.g., mayflies, caddisflies, and stoneflies) and the maximum monthly temperatures do not exceed 68°F. Coldwater fisheries are a stenothermic environment and therefore the restrictive conditions often warrant some level of protection.

Pennsylvania and West Virginia have developed their own regulatory systems for evaluating, classifying, and monitoring their surface waters. Each system includes the assignment of "beneficial use designations" that describe the potential or realized capacity of a waterbody to provide defined ecological benefits and recreational values for residents and visitors. The use designation system for each state is discussed in detail in Section 2.2.2.2 of Resource Report 2. State water classifications for waterbodies crossed by the Project route are detailed in Appendix 2-B, Waterbody Crossing Table. The final number of waterbodies crossed by the Project is pending and will be identified in the final submission of Resource Report 3.

A review of the PFBC online interactive county map that identifies warmwater and coldwater fisheries, stocked trout streams, state fish hatcheries, and special regulated streams did not identify any that would be crossed or affected by the Project in Pennsylvania (PFBC 2015a). A review of the West Virginia Hunting, Trapping and Fishing Map did not identify any fishing and boating access sites, stocked trout streams, special regulation areas (warmwater species), or public fishing areas in the area of the Webster Interconnect (WVDNR no date), the H-319 pipeline or the Mobley Tap.

3.1.2 Existing Fishery Resources

All surface waters crossed by the Project are designated as freshwater habitats. All fisheries crossed by the Project are classified as warmwater or coldwater fisheries. Major waterbodies that will be crossed by the Project include the South Fork Ten Mile Creek (crossed by H-316 pipeline) and Monongahela River (crossed by H-318 pipeline). The South Fork Ten Mile Creek is a tributary to the Monongahela River.

Resource Report 2 Section 2.2.2.2 (Surface Water Classifications) details the Pennsylvania and West Virginia regulatory systems for evaluating, classifying, and monitoring its surface waters and includes a summary of the use designation system for each state. Each system assigns "beneficial use designations" for the potential or realized capacity of a waterbody to provide defined ecological benefits and recreational values for residents and visitors. State water classifications for waterbodies crossed by the Project route are detailed in Appendix 2-B, Waterbody Crossing Table.

The Commonwealth of Pennsylvania classifies surface waters according to five broad categories of protected water use: aquatic life, water supply, recreation and fish consumption, special protection, and other. The aquatic life category has four sub-categories: coldwater fishes, warmwater fishes, migratory

fishes, and trout stocking (United States Environmental Protection Agency [USEPA] 2012). The recreation and fish consumption category has four sub-categories: boating, fishing, water contact sports, and aesthetics. Waters that have not been assigned a designated use are assigned a default designation of: warm water fishes, potable water supply, industrial water supply, livestock water supply, wildlife water supply, irrigation, boating, fishing, water contact sports, and aesthetics.

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

River basins or watersheds are land areas that drain to a particular waterbody (i.e., lake, stream, river, and estuary). A river basin drains to a large river, and the term watershed describes a smaller area of land draining to a smaller stream, lake, or wetland. Appendix 3-A provides a list of the typical fish species occurring in the Ohio River Basin, which includes the South Fork Ten Mile Creek and the Monongahela River basins. South Fork Ten Mile Creek and Monongahela River are the two major waterbodies crossed by the Project. Webster, the location for the interconnect, is located in the Hydrologic Unit Code (HUC) 8 Little Muskingum-Middle Island watershed, adjacent to North Fork Fishing Creek, which also is part of the Ohio River Basin (USEPA 2015). These waterbodies are located within the Permian Hills level IV ecoregion (Ecoregions are discussed in Section 3.2.1 of this report). Special status fish and aquatic invertebrate species (snails and mussels) are discussed in Section 3.4.1 (Protected Aquatic and Marine Species) of this report, and includes a table of aquatic species considered by federal and state resource agencies to be most in need of conservation. Details pertaining to fisheries resources associated with the Mobley Tap will be provided in the final version of Resource Report 3.

3.1.2.1 Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act set forth a new mandate for the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS), regional fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitats. This mandate is addressed through the establishment of "essential fish habitat" (EFH) for federally managed species. The Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265 as amended through October 11, 1996) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity."

According to the NMFS online EFH Mapper tool, accessed May 23, 2015 (NMFS 2015), no EFH occur within the Project area. Because the Project is located well inland of saltwater and tidal waters and does not cross known anadromous or diadromous fish migration routes, none of the waterbodies crossed by the Project contain, or have the potential to support, species managed by the NMFS. Those waterbodies with direct connection to rivers that drain into the Gulf of Mexico and the Atlantic Ocean (i.e., South Fork Ten Mile Creek and Monongahela River) have dams and/or reservoirs that inhibit potential upstream movement of migratory species that spend a portion of their life cycle at sea, returning to inland freshwater systems to breed and/or spawn.

Equitrans is in the process of consulting with NMFS to confirm that no threatened or endangered species, or EFH under NMFS jurisdiction are known or expected to occur in the Project area.

3.1.2.2 Aquatic Species Potentially Occurring Near Project

The Project route is located in Allegheny, Greene, and Washington Counties in Pennsylvania and in Wetzel County, West Virginia. The major waterbodies that will be crossed by the Project are the South Fork Ten Mile Creek in Greene County, Pennsylvania and the Monongahela River in Allegheny and Washington Counties, Pennsylvania. Both of these waterbodies are located within the Ohio River Basin Watershed (Pennsylvania Department of Environmental Protection 2015).

Ten Mile Creek is a third-order stream with a drainage area of approximately 338 square miles (Greene County Conservation District 2013). Ten Mile Creek begins in South Franklin Township, Washington County, and drains east for approximately 12 miles, forming the northeastern county line between Washington and Greene Counties, eventually emptying into the Monongahela River in Millsboro, Pennsylvania. The Pennsylvania Department of Environmental Protection has classified Ten Mile Creek as a Trout Stocked Fishery from the source to convergence with South Fork Ten Mile Creek and a Warm Water Fishery from South Fork Ten Mile Creek to the mouth; however, these designations are not associated with the section of South Fork of Ten Mile Creek that is associated with the Project.

The streams of the Monongahela River watershed contain a diversity of habitats, with streams located along the western side of the watershed generally associated with warmwater fishery systems, containing a much higher diversity of fish in comparison to the coldwater fishery systems associated with the mountainous areas along the eastern side of the watershed. The Monongahela River basin supports modest fish diversity and contains approximately 89 native taxa, 13 introduced species, and 2 euryhaline species, along with 2 fish species that have been extirpated in recent history. No endemic species have been identified for the Monongahela River basin. Fish fauna associated with the basin include 32 species of Cyprinidae, 12 Catostomidae, 9 Ictaluridae, 1 Cottidae, 11 Centrarchidae, and 15 Percidae species (United States Army Corps of Engineers, Pittsburgh District 2012).

Webster is located in the HUC 8 Little Muskingum-Middle Island watershed, adjacent to North Fork Fishing Creek (USEPA 2015). Little Muskingum-Middle Island is a fourth-level watershed that is part of the Upper Ohio River Basin and within the larger Ohio River Basin (United States Department of Agriculture [USDA] Natural Resources Conservation Service 2015; United States Geological Survey 2014).

Appendix 3-A provides a list of fish species that have the potential to occur in the Ohio River Basin, in which the Project is located. This list will be further refined to include species expected to occur within the Project area upon completion of field surveys and the agency consultation process.

The Pennsylvania Comprehensive Wildlife Conservation Strategy provides a list of priority mussel species for the entire state (PGC and PFBC 2008). All native mussels are protected in the state of West Virginia (including nine federally listed species). Freshwater mussels are expected to occur within waterways traversed by the Project. A list of mussels expected to occur in the Project area will be developed and included in this section upon completion of the field surveys and as agency consultation regarding potential impacts to mussel species from the Project progresses.

3.1.2.3 Commercial Fisheries

Commercial fishing in Pennsylvania is allowed in accordance with Pennsylvania Code Title 58 Chapter 69: Fishing in Lake Erie and Boundary Lakes, Subchapter D, Commercial Fishing, Seasons and Nets, Section 69.31. Provisions of 58 Pennsylvania Code §69.31 limit commercial fishing to Lake Erie. The Project components in Pennsylvania are located within Allegheny, Greene, and Washington Counties, and are not located in proximity to Lake Erie. As such, the Project will have no impact on commercial fishing in Pennsylvania.

West Virginia State Code allows the Director of the WVDNR to issue permits for commercial take of certain species from the Ohio River. Currently, there is a provision for the Director to issue permits for the commercial take of minnows and other bait from West Virginia waters (Preston 2010); however, other than this provision, commercial fishing (e.g., trawling, seining, gill netting, trap netting fish or shellfish for wholesale or retail sale) is not permitted in West Virginia. The Project is not expected to have any significant impact on the take of minnows and other bait in the waterbodies located in the vicinity of the Webster Interconnect. The Mobley Tap will be addressed in the final version of Resource Report 3.

Although not commercial fishing in the traditional sense, Pennsylvania and West Virginia both have active aquaculture industries. Pennsylvania ranks third in the United States, behind California and Washington, for the value of trout distributed for conservation and recreational purposes. Pennsylvania produced trout valued at $15.5 million in 2011, which accounts for approximately 9 percent of the nation's distributed trout value (USDA National Agricultural Statistics Service, Pennsylvania Field Office 2012). Trout in Pennsylvania were primarily produced by the state fish commission, its cooperative nurseries, and private fishing clubs. Commercial trout production was approximately 1.82 million pounds of trout, valued at $6.3 million during 2011. Pennsylvania farm-raised trout for conservation and recreational purposes was valued at $9.2 million in in 2011.

No Pennsylvania State Fish Hatcheries or trout-stocked flowing waters are located within the Project area in Pennsylvania based on a review of the PFBC online interactive county map that identifies state fish hatcheries (PFBC 2015a). No private sport fish hatcheries are located within Allegheny, Greene, or Washington Counties, Pennsylvania (Pennsylvania Department of Agriculture no date).

Trout is the fish most commonly grown by West Virginia aquaculturists (West Virginia Department of Agriculture 2009). In 2012, aquaculture sales in the state of West Virginia totaled $2,835,000 of which the primary sales involved trout ($2.77 million) and catfish ($54,000) (USDA 2014). Sales of other sport fish totaled $7,000 in 2012. Commercial trout production in West Virginia in 2014 was valued at $1.23 million (USDA National Agricultural Statistics Service, West Virginia Field Office 2015). The WVDNR is the largest single producer of fish in the state. It operates two warmwater and seven coldwater hatcheries, none of which are located in Wetzel County. No state fish hatcheries (Shingleton 2013; WVDNR 2003a) or private aquaculture facilities (West Virginia Department of Agriculture 2002) are located within the West Virginia portion of the Project.

3.1.2.4 Recreational Fisheries

Recreational fishing in all environments (i.e., marine, estuarine, and freshwater) provides economic and conservation benefits to Pennsylvania and West Virginia. In 2011, all fishing-related expenditures in Pennsylvania totaled approximately $486 million (USFWS and United States Census Bureau 2014a), and

all fishing related expenditures in West Virginia totaled approximately $429 million (USFWS and United States Census Bureau 2014b).

3.1.3 Fisheries of Special Concern

Waterbodies with fisheries of special concern include those that have fisheries with important recreational value, support coldwater fisheries, are included in special state fishery management regulations, or provide habitat for federally or state-listed threatened and endangered, or candidate species. Waterbodies that have significant economic value because of fish stocking programs, commercial fisheries, EFH, or tribal harvest, also are considered fisheries of special concern. Field surveys and agency consultation are ongoing, and once these are completed, any waterbodies considered fisheries of special concern that are anticipated to be crossed by the Project will be included in this section. Additionally, Equitrans is in the process of consulting with NMFS to confirm that no threatened or endangered species or EFH under NMFS jurisdiction are known or expected to occur in the Project area.

3.1.3.1 Federal Fisheries of Special Concern

Federally listed or candidate aquatic species under jurisdiction of the USFWS may be present within the vicinity of the Project. Field surveys and agency consultation are ongoing, and once these are completed, any waterbodies anticipated to be crossed by the Project that will impact any federal fisheries of species concern will be included in this section. Table 3.1-1 identifies the special status fish species identified for Allegheny, Greene, and Washington Counties, Pennsylvania.

Table 3.1-1

Fish Species of Conservation Concern in Allegheny, Greene, and Washington Counties, Pennsylvania With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status	State Status a/	Global Rank b/	State Rank c/	Allegheny County	Greene County	Washington County
Bluebreast darter	*Etheostoma camurum*		PT	G4	S4	X		
Brindled madtom	*Noturus miurus*		PT	G5	S2	X	X	
Bullhead minnow	*Pimephales vigilax*			G5	SX	X		
Channel darter	*Percina copelandi*			G4	S4	X		
Ghost shiner	*Notropis buchanani*			G5	S1	X		
Gravel chub	*Erimystax x-punctatus*		PE	G4	S1	X		
Longhead darter	*Percina marcocephala*			G3	S3	X		X
Longnose gar	*Lepisosteus osseus*			G5	S4S5	X	X	
Mooneye	*Hiodon tergisus*			G5	S4	X		
Ohio lamprey	*Ichthyomyzon bdellium*		PC	G3G4	S3S4	X		
River redhorse	*Moxostoma carinatum*			G4	S3S5	X		
Skipjack herring	*Alosa chrysochloris*			G5	S4	X		
Smallmouth buffalo	*Ictiobus bubalus*			G5	S4	X		X

Table 3.1-1

Fish Species of Conservation Concern in Allegheny, Greene, and Washington Counties, Pennsylvania With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status	State Status a/	Global Rank b/	State Rank c/	Allegheny County	Greene County	Washington County
Southern redbelly dace	*Phoxinus erythrogaster*		PT	G5	S1	X		
Spotted sucker	*Minytrema melanops*		PT	G5	S1	X	X	
Tippecanoe darter	*Eteostoma tippecanoe*		PT	G3G4	S3S4	X		
Warmouth	*Chaenobryttus gulosus*		PE	G5	S3	X	X	

a/ PC = animals that could become endangered or threatened in the future, are uncommon with restricted distribution, or at risk because of certain aspects of their biology; PE = Pennsylvania Endangered; PT = Pennsylvania Threatened

b/ G#G# = Range Rank (indicates range of uncertainty about the exact status of a taxon or ecosystem type); G3 = Vulnerable (at moderate risk of extinction due to a restricted range, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors); G4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors); G5 = Secure (common, widespread, and abundant)

c/ S#S# = Range Rank (indicates any range of uncertainty about the status of the species or ecosystem); SX = Presumed Extinct (believed to be extirpated from the nation or state; not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered); S1 = Critically Imperiled (extreme rarity [often 5 or fewer populations] in the nation or state, or due to some factor(s) such as very steep declines, making it vulnerable to extirpation in the state); S2 = Imperiled (rarity due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors making it very vulnerable to extirpation from the nation or state); S3 = Vulnerable (restricted range in the nation or state, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors making it vulnerable to extirpation); S4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors); S5 = Secure (common, widespread, and abundant)

Equitrans is in the process of consulting with NMFS to confirm that no threatened or endangered species, or EFH under NMFS jurisdiction are known or expected to occur in the Project area.

3.1.3.2 State Fisheries of Special Concern

Warmwater and coldwater hatcheries are present in Pennsylvania and West Virginia, and both have state programs to release fishes into respectively supporting waterbodies. Both states implement trout stocking programs into streams with suitable habitat requirements. In addition, both states have streams that harbor wild, reproducing populations of trout; however none of these streams are located in the Project area (PFBC 2005 and wildtroutstreams.com 2014).

3.1.4 Fisheries Impacts and Mitigation

This section describes potential impacts and measures that will be implemented to minimize impacts on fisheries resources along the Project. The Project does not cross marine, estuarine, or diadromous fish environments, so fisheries associated with those environments will not be affected. The Project will be constructed across freshwater environments; however, none have been identified as fisheries of special concern. No commercial or recreational fisheries are expected to be impacted by the Project.

Short-term impacts on fisheries associated with pipeline construction activities may be caused by temporary increases in sedimentation and turbidity, introduction of water pollutants, or entrainment of fish. However, no long-term effects on dissolved oxygen, pH, benthic invertebrates, or fish communities are expected to occur due to the construction or operation of the Project facilities. Equitrans will adopt FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures) (May 2013 versions) and will develop its own Project-specific Erosion and Sediment Control Plan (E&SCP) that will outline best management practices (BMPs) to avoid increasing sedimentation of downstream habitats and to minimize impacts on fishery resources.

Construction impacts on fishery resources may include direct contact by construction equipment with food resources in the form of relatively immobile prey, increased sedimentation and water turbidity immediately downstream of the construction work area, alteration or removal of aquatic habitat cover and vegetation on adjacent banks, and introduction of contaminants. Equitrans will implement the FERC's Plan and Procedures and its E&SCP to minimize potential impacts associated with loss of riparian shade and vegetation cover. Clearing of trees and other vegetation will be restricted to only what is necessary to safely construct and operate the Project. Once construction is complete, streambeds and banks will be restored to preconstruction conditions to the fullest extent practicable. Restoration, bank stabilization, and revegetation efforts, which are defined in the FERC's Plan and Procedures, will minimize the potential for erosion from the surrounding landscape. Adherence to the FERC's Plan and Procedures and the Equitrans E&SCP also will maximize the potential for regrowth of riparian vegetation, thereby minimizing the potential for any long-term impacts associated with lack of shade and cover.

Equitrans does not anticipate the need to conduct blasting for the Project; however, should it become necessary, Equitrans will develop and submit a blast plan to the FERC's Office of Energy Projects for its review and acceptance prior to use.

Equitrans will adhere to time of year restrictions for land clearing and time of year restrictions near sensitive waterbodies to the maximum extent practical. Pennsylvania and West Virginia may have different time of year restrictions, and furthermore these restrictions may differ from those identified in the FERC's Procedures. If time of year restrictions identified for Pennsylvania and/or West Virginia cannot be adhered to, notification will be provided on a case-by-case basis to the applicable agency requesting a modification or waiver. These efforts will minimize the potential impacts to the fisheries spawning, recruitment, ecology, and populations.

Project information has been received from the Pennsylvania Natural Diversity Inventory for streams that contain freshwater mussels. To avoid impacts, streams known to contain freshwater mussels in the Project area will be surveyed, and freshwater mussels will be collected and then relocated upstream from the Project area. Additionally, use of horizontal directional drilling (HDD) techniques for crossing of the South Fork of Ten Mile Creek will avoid impacts to freshwater mussels in this waterbody.

3.1.4.1 Access Roads and Aboveground Facilities

Several potential aboveground facilities have been identified for installation near riparian zones; however, it is not known at this time whether these activities will impact sensitive aquatic species with the potential to occur in the Project area. Sensitive aquatic species or sensitive streams with the potential to be impacted by the Project will be identified through field surveys and agency consultation, both of which are ongoing.

Aboveground facilities positioned adjacent to riparian zones will implement appropriate BMPs to prevent adverse effects to nearby waterways. Construction activities associated with aboveground facilities (e.g., compressor stations; contractor yards) will be restricted to and performed following the FERC's Plan and Procedures and the Equitrans E&SCP. To the extent practical, Equitrans will use existing access roads for the Project or other existing farm or construction access roads.

3.1.4.2 Waterbody Construction Methods

Construction methods at waterbody crossings will vary with the characteristics of the waterbody encountered and will be performed consistent with permit conditions outlined in the regulatory approvals. Methods for construction at waterbody crossings are detailed in Section 1.4.1.1 (Standard Construction and Restoration Techniques Typical Upland Pipeline Construction Procedures, Typical Waterbody Crossings) of Resource Report 1 and include dam and pump, flume, horizontal bore, open-cut, and HDD techniques.

Most intermediate waterbodies (greater than 10 feet wide and less than or equal to 100 feet wide) and minor channels (less than 10 feet wide at water's edge) will be crossed by dry crossing methods (dam and pump and flume). Temporary construction-related impacts would be limited primarily to short periods of increased turbidity during the installation of temporary upstream and downstream dams prior to pipeline installation, and following installation of the pipeline when the dams are removed and flow across the restored work area is re-established.

Avoidance of streambed disturbance can be achieved by HDD and conventional bore methods and may be used by Equitrans to avoid direct impacts to certain sensitive waterbodies. HDD methods are proposed for the Monongahela River (H-318 pipeline) and South Fork Ten Mile Creek (H-316 pipeline) crossings. The HDD method allows trenchless construction by drilling a borehole well below the depth of a conventional pipeline lay and pulling the pipeline through the pre-drilled borehole.

Mitigation measures will be implemented to minimize impacts on the aquatic environment during construction as described in the FERC's Procedures. Construction activities will be scheduled so that the trench is excavated immediately prior to pipe laying activities. In accordance with the FERC's Procedures, excavated spoil that is stockpiled in the construction right-of-way will be at least 10 feet from the stream bank or in approved additional work areas, and will be surrounded by sediment control devices to prevent sediment from returning to the waterbody. The waterbody banks will be returned to as near to pre-construction conditions as possible within 24 hours of completion of each open-cut crossing.

3.1.4.3 Vegetation Clearing

Removal of trees and other streamside vegetation from the edges of waterbodies at the crossing may reduce shading of the waterbody, diminish escape cover, and can result in locally elevated water temperatures. Elevated water temperatures can, in turn, lead to reductions in levels of dissolved oxygen. This can negatively influence habitat quality and reduce availability of habitat for certain fish species. Equitrans has attempted to minimize impacts resulting from tree clearing by routing the pipeline adjacent to existing cleared rights-of-way and previously developed corridors and open lands where possible.

To further minimize potential impacts associated with loss of riparian shade and vegetation cover, clearing of trees and other vegetation will be restricted to only what is necessary to safely construct and operate the pipeline. Once construction is complete, streambeds and banks will be restored to preconstruction conditions to the fullest extent practicable. Restoration, bank stabilization, and revegetation efforts, which

are defined in the FERC's Procedures, will minimize the potential for erosion from the surrounding landscape. Adherence to the FERC's Procedures also will maximize the potential for re-growth of riparian vegetation, thereby minimizing the potential for long-term impacts associated with lack of shade and cover.

Implementation of the FERC's Procedures during construction will minimize the short-term impacts on fishery resources and the aquatic habitats upon which these fishery resources depend. After construction, invertebrate populations will recolonize the crossing area and temporary workspaces will revert to their original condition, including re-establishment of riparian cover. Furthermore, operation and routine maintenance of the pipeline right-of-way and aboveground facilities, which will be restricted to clearing and mowing vegetation on the permanent right-of-ways, are not expected to have any noticeable impact on fishery resources crossed by the Project.

Equitrans will limit the amount of vegetation cleared between the waterbody and the additional temporary workspaces (ATWS) and minimize the amount of ATWS to the greatest extent possible. Crossings will be aligned as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions allow. ATWS are typically located at least 50 feet away from the wetland/water's edge unless adjacent uplands consist of actively cultivated or rotated cropland or other disturbed land. If the pipeline parallels a waterbody, Equitrans will attempt to maintain a vegetation buffer zone between wetland/waterbodies and the upland construction areas, except for the pipe trench and travel lane. Implementation of the FERC's Plan and Procedures will minimize short- and long-term water quality impacts within the waterbodies crossed by the proposed pipeline.

3.1.4.4 Hydrostatic Test Water

As described in Resource Report 1, Section 1.4.1.1 (Standard Construction and Restoration Techniques Typical Upland Pipeline Construction Procedures), the pipeline will be hydrostatically tested following backfilling of the trench to ensure that it is capable of safely operating at the design pressure. Water for hydrostatic testing will be obtained from various sources, as described in Resource Report 2. Baseline water samples will be taken at the source prior to water up and prior to discharge. Test segments of the pipeline will be capped and filled with water and pressurized to a minimum of 1.1 to 1.5 times (based on location class) the designed operating pressure for a minimum of eight hours in accordance with the United States Department of Transportation requirements identified in 49 Code of Federal Regulations (CFR) Part 192 (Transportation of Natural and other Gas by Pipeline) prior to being placed in service. Any loss of pressure that cannot be attributed to other factors, such as temperature changes, will be investigated. Any leaks detected will be repaired and the segment will be retested. Discharge of hydrostatic test water could potentially result in scour and sediment transport to adjacent waterbodies, adversely affecting aquatic species.

Prior to construction, Equitrans will obtain applicable water withdrawal permits, as well as consult with applicable regulatory agencies to determine general and site-specific requirements to avoid transporting aquatic invasive species.

Upon completion of the test, the water may be pumped to the next segment for testing, or the water may be discharged. The test water will be discharged through an energy-dissipating device in compliance with National Pollutant Discharge Elimination System permit conditions. Equitrans holds a general permit (PAG-10) to discharge within Pennsylvania, and will comply with its conditions. Equitrans will submit a site registration to West Virginia, which requires a 60-day review, to utilize their general permit for

hydrostatic testing. Topography and the availability of test water will influence the length of each test segment. At this phase of the design, hydrostatic test water withdrawal and discharge locations have not been identified. These will be provided in a subsequent draft Resource Report 1 and draft Resource Report 2. Test water will contact only new pipe, and no chemicals will be added. An exception would be that if chlorinated water is used for testing, a dechlorinating agent may be required prior to discharge.

Once a segment of pipe has been successfully tested and dried, the test cap and manifold will be removed, and the pipe will be connected to the remainder of the pipeline. A series of foam pigs will be used to dry the pipe until the air inside the pipe reaches a dew point of -40°F. If that cannot be achieved with foam pigs alone, nitrogen slugs may be used for drying. Equitrans will implement Section VII of the FERC's Procedures regarding hydrostatic testing, as well as any specifications in individual state permit guidelines. Hydrostatic testing is discussed further in draft Resource Report 2.

3.1.4.5 Spill Prevention and Control

Accidental spills of construction-related fluids (e.g., oil, gasoline, or hydraulic fluids) on the landscape or directly into waterbodies could result in water quality impacts affecting fish and other organisms. Impacts to fisheries would depend on the type and quantity of the spill, and the dispersal and attenuation characteristics of the waterbody. Minimization and mitigation procedures related to water quality will be addressed in Equitrans' Spill Prevention, Containment, and Countermeasure Plan (SPCC Plan). The implementation of the SPCC Plan will minimize the potential for adverse effects on aquatic species from the accidental or unintended release of contaminants. To minimize spill risk and in accordance with FERC's Procedures, fuel will not be stored within 100 feet of wetlands or other waterbodies. During operations, an individual SPCC Plan will be implemented at each aboveground facility that stores oil in excess of the volumes identified in 40 CFR 112 to protect surface water resources during operation.

3.2 VEGETATION

This section describes the vegetation resources potentially affected by construction and operation of the Project. Included are the descriptions of various plant communities found in the Project area and methods that will be used to minimize impacts on these vegetation resources.

3.2.1 Ecoregions

Areas similar in ecosystem composition and in the type, quality, and quantity of environmental resources are generally denoted as ecoregions. Boundaries of ecoregions are delineated based on patterns observed in vegetation, animal species, geology, soil, water quality, climate, human land use, and miscellaneous living and non-living ecosystem components. Ecoregions provide a spatial framework for the research, management, and monitoring of ecosystems often employed by many federal and state agencies to develop biological criteria and resource quality standards for a given area. A Roman numeral hierarchical scheme is utilized for different levels of ecological regions, Level I being the coarsest and Level IV being the most detailed. All Project facilities are located within the Western Allegheny Plateau Level III ecoregion. The Webster Interconnect and the eastern portion of the H-316 Pipeline are located within the Permian Hills Level IV ecoregion, whereas the remainder of the Project facilities are located within the Monongahela Transition Zone Level IV ecoregion. The following descriptions of these ecoregions are derived from the USEPA (Woods et al. 1999; Omernik and Griffith 2008).

In West Virginia, the Western Allegheny Plateau ecoregion consists of an area extending from the northern panhandle down into the center of the state where it follows the Monongahela Transition Zone in a northeasterly direction. This ecoregion is a mostly unglaciated, dissected plateau with crestal elevations of less than 2,000 feet. It is underlain by horizontally bedded sedimentary rock that is frequently mined for coal. The soils developed from residuum and support Appalachian oak and mixed mesophytic forests. The current land uses include a mosaic of forests, urban-suburban-industrial activity, agriculture, pastures, coal mines, and oil-gas fields.

The easternmost 0.67 mile of the H-316 pipeline, as well as the entire Webster Interconnect, is located within the Permian Hills Level IV ecoregion. The Permian Hills ecoregion is characterized by hilly terrain, with elevations ranging from 575 to 1,600 feet, and relief ranging from 200 to 750 feet. The ecoregion is generally more rugged, forested, and cooler than the adjacent Monongahela Transition Zone ecoregion. Soils are mostly Alfisols and Ultisols which support a natural vegetation of Appalachian oak forest or mixed mesophytic forest. Soils were derived from shale, siltstone, limestone, sandstone, and coal. Forests are common in the ecoregion as most of the area is too steep to be farmed or is reverting to woodland. However, there are some farms that grow corn and hay on the ridges, as well as some pastures on the hillslopes. Grazing and cultivation in the area have caused slope erosion and upland topsoil is often thin or absent. Coal mining and oil and gas production also occur in the area. The Mobley Tap will be addressed in the final version of Resource Report 3.

The remainder of the Project facilities, including the western 2.3 miles of the H-316 pipeline, and the entirety of the H-318, H-158, and M-80 pipelines, as well as the Pratt and Redhook compressor stations, are located within the Monongahela Transition Zone Level IV ecoregion. The Monongahela Transition Zone ecoregion is characterized by unglaciated hills, knobs and ridges underlain by interbedded limestone, shale, sandstone and coal. Elevations range from 575 to 1,900 feet, and relief ranges from 200 to 700 feet. Vegetation in the area is mapped as mostly mesophytic forest. Forests are extensive and urban, suburban, and industrial activities are found in the river valleys that also serve as transportation corridors. Coal mining is common but some general farming and oil production occurs in the area as well. Acid mine drainage, siltation, and industrial pollution also can degrade stream habitat and affect fish and invertebrates, and may result in the disappearance of some freshwater species.

3.2.2 Existing Vegetation

Vegetation cover types along the Project route are determined by review of aerial photography, existing land use classifications, and field surveys. Descriptions of existing representative vegetation cover types along the Project route are based on the natural community classification system described in the 2011 National Land Cover Database (NLCD) (Jin et al. 2013).

Developed or managed land classes mapped along the Project route consist of agricultural land, industrial, commercial, and residential areas. Major natural vegetation land classes include forested upland, herbaceous upland, and wetlands. The following paragraphs provide a description of NLCD land classes along the Project route.

3.2.3 Agricultural Land

According to the 2011 NLCD, agricultural land includes pastureland, hay fields, and cultivated crops subclasses. Pastureland and hay fields are characterized as areas of grasses, legumes, or grass-legume

mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation within this subclass.

Cultivated crops are areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton. Cultivated crops also include areas devoted to perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20 percent of total vegetation within this subclass. This class also includes all land being actively tilled.

Table 3.2-1 provides a breakdown of agricultural land within the footprint of Project facilities.

Table 3.2-1

Agricultural Land Crossed by the Project Facilities

Project Facility	Acres/Miles Crossed a/	Percent (%) of Facility
H-316 Pipeline		
Pipe Centerline	1.44	48%
Permanent Right-of-Way	8.92	48%
Temporary Workspace b/	23.31	44%
Subtotal Acres	**32.23**	
H-318 Pipeline		
Pipe Centerline	0.94	22%
Permanent Right-of-Way	7.49	28%
Temporary Workspace	37.26	35%
Subtotal Acres	**44.75**	
H-158 and M-80 Pipelines		
Pipe Centerline	0.05	21%
Permanent Right-of-Way	0.13	9%
Temporary Workspace	3.12	31%
Subtotal Acres	**3.25**	
H-305 and H-319 Pipelines c/		
Pipe Centerline	TBD	TBD
Permanent Right-of-Way	TBD	TBD
Temporary Workspace	TBD	TBD
Subtotal Acres	**TBD**	
Compressor Stations, Interconnect, and Ancillary Facilities		
Redhook Compressor Station	10.66	60%
Pratt Compressor Station	5.99	78%
Webster Interconnect	0.00	0%
Mobley Tap	TBD	TBD
Subtotal Acres	**16.65**	
Grand Total Miles	**2.43**	
Grand Total Acres	**96.88**	

a/ Pipeline Centerline values equal miles; all other values in the table equal acreages of expected impacts

b/ Temporary Workspace includes the entirety of the permanent right-of-way as well as temporary access roads and additional temporary workspace.

c/ Details for the H-305 and H-319 pipeline segments will be provided in the final version of Resource Report 3.

3.2.4 Forested Upland

The NLCD forested upland land class includes deciduous forest, evergreen forest, and mixed deciduous-evergreen forest. Of the NLCD forested upland sub-classes, only deciduous forest is mapped within the Project area.

3.2.4.1 Upland Deciduous Forest

According to the 2011 NLCD, areas of upland deciduous forest are dominated by trees generally greater than 15 feet tall, and contain greater than 20 percent of total vegetation cover. More than 75 percent of the tree species shed foliage simultaneously in response to seasonal change. A variety of upland deciduous forest vegetation communities are present along the Project route. The dominant type is oak-hickory forest, followed by mixed mesophytic forest.

Oak-hickory forest, also known as Appalachian oak forest, is dominated by a canopy consisting of red oak (*Quercus rubra*), often codominanted by red maple (*Acer rubrum*), black oak (*Quercus velutina*), white oak (*Q. alba*), mockernut hickory (*Carya tomentosa*), shagbark hickory (*C. ovata*), sweet birch (*Betula lenta*), yellow birch (*B. alleghaniensis*), white ash (*Fraxinus americana*), American beech *(Fagus grandifolia*), and tuliptree (*Liriodendron tulipifera*). Historically, American chestnut (*Castanea dentata*) was a dominant or co-dominant in this community until its virtual elimination due to the chestnut blight caused by the accidental introduction of the pathogenic fungus *Cryphonectria parasitica* during the early 1900s. Common sub-canopy species in oak-hickory forests include northern arrowwood (*Viburnum recognitum*), southern arrowwood (*V. dentatum*), maple-leaved viburnum (*V. acerifolium*), smooth serviceberry (*Amelanchier laevis*), shadbush (*A. arborea*), mountain laurel (*Kalmia latifolia*), hornbeam (*Carpinus caroliniana*), hop-hornbeam (*Ostrya virginiana*), witch hazel (*Hamamelis virginiana*), and spicebush (*Lindera benzoin*). The herbaceous layer within oak-hickory forests varies greatly and is dependent on local site conditions. Common species encountered include wildoats (*Uvularia sessilifolia*), false solomon's-seal (*Smilacina racemosa*), mayapple (*Podophyllum peltatum*), pipissewa (*Chimaphila maculate*), teaberry (*Gaultheria procumbens*), Indian cucumber-root (*Medeola virginiana*), blue cohosh (*Caulophyllum thalictroides*)—on richer sites, wood ferns (*Dryopteris spp.*), and hayscented fern *(Dennstaedtia punctilobula*) (Fike 1999).

Mixed mesophytic forest is dominated by tuliptree, sugar maple (*Acer saccharum*), American beech, basswood (*Tilia americana*), red oak, cucumbertree (*Magnolia acuminate*), wild black cherry (*Prunus serotine*), white ash, black walnut (*Juglans nigra*), shagbark hickory, Ohio buckeye (*Aesculus glabra*), and yellow buckeye (*A. flava*). Eastern hemlock (*Tsuga canadensis*) may occur in these forests, but is not characteristically a dominant. Common sub-canopy trees and shrubs include pawpaw (*Asimina triloba*), bladdernut (*Staphylea trifolia*), rosebay (*Rhododendron maximum*), umbrella magnolia (Magnolia tripetal, redbud (*Cercis canadensis*), spicebush, wild hydrangea (*Hydrangea arborescens*), and witch hazel. The herbaceous flora is extremely rich and includes such species as white trillium (*Trillium grandiflorum*), purple trillium (*T. erectum*), toadshade (*T. sessile*), trout lily (*Erythronium americanum*), wild blue flox (*Phlox divaricate)*, wood anemone (*Anemone quinquefolia*), squirrelcorn (*Dicentra Canadensis*), dutchman's-breeches (*D. cucullaria*), speckled wood-lily (*Clintonia umbellulata*), black snakeroot (*Cimicifuga racemosa*), wood geranium (*Geranium maculatum*), blue cohosh (*Caulophyllum thalictroides*), foam flower (*Tiarella cordifolia*), liverleaf (*Hepatica nobilis*), wild leek (*Allium tricoccum*), bloodroot (*Sanguinaria Canadensis*), yellow fumewort (*Corydalis flavula*), rattlesnake fern (*Botrychium virginianum*), spring beauty (*Claytonia virginica*), cut-leaved toothwort (*Cardamine concatenate*),

bishop's-cap (*Mitella diphylla*), and wild ginger (*Asarum canadense*). Most of these systems have a complete, or nearly complete, annual litter turnover (Fike 1999).

Table 3.2-2 provides a breakdown of forested upland within the footprint of Project facilities.

Table 3.2-2

Upland Deciduous Forest Crossed by the Project Facilities

Project Facility	Acres/Miles Crossed a/	Percent (%) of Facility
H-316 Pipeline		
Pipe Centerline	1.26	42%
Permanent Right-of-Way	7.79	43%
Temporary Workspace b/	23.08	44%
Subtotal Acres	**30.87**	
H-318 Pipeline		
Pipe Centerline	2.07	49%
Permanent Right-of-Way	12.95	49%
Temporary Workspace	44.43	42%
Subtotal Acres	**57.38**	
H-158 and M-80 Pipelines		
Pipe Centerline	0.13	59%
Permanent Right-of-Way	0.79	56%
Temporary Workspace	2.97	30%
Subtotal Acres	**3.76**	
H-305 and H-319 Pipelines c/		
Pipe Centerline	TBD	TBD
Permanent Right-of-Way	TBD	TBD
Temporary Workspace	TBD	TBD
Subtotal Acres	**TBD**	
Compressor Stations and Interconnect		
Redhook Compressor Station	4.52	26%
Pratt Compressor Station	0..35	5%
Webster Interconnect	1.30	95%
Subtotal	**6.17**	
Grand Total Miles	**3.46**	
Grand Total Acres	**98.18**	

a/ Pipeline Centerline values equal miles; all other values in the table equal acreages of expected impacts.

b/ Temporary Workspace includes the entirety of the permanent right-of-way as well as temporary access roads and additional temporary workspace.

c/ Details for the H-305 and H-319 pipeline segments will be provided in the final version of Resource Report 3.

3.2.5 Herbaceous Upland

Herbaceous upland includes natural to semi-natural areas of open grassland. According to the 2011 NLCD, grassland is dominated by grammanoid or herbaceous vegetation, generally greater than 80 percent of total vegetation, and is not subject to intensive management such as tilling but can be utilized for grazing. Common grassland species with potential to occur within the Project area include little bluestem

(*Schizachyrium scoparium*), Pennsylvania sedge (*Carex pensylvanica*), poverty grass (*Danthonia spicata*), common hairgrass (*Deschampsia flexuosa*), a sedge (*C. communis*), prickly dewberry *(Rubus flagellaris*), bush clovers (*Lespedeza* spp.), wild columbine (*Aquilegia Canadensis*), shooting star (*Dodecatheon meadia*), white heath aster (*Aster ericoides*), aromatic aster (*A. oblongifolius*), bladder fern (*Cystopteris bulbifera*), side-oats gramma (*Bouteloua curtipendula*), purple cliff-brake (*Pellaea atropurpurea*), evergreen wood fern (*Dryopteris marginalis*), nodding onion (*Allium cernuum*), alum root (*Heuchera Americana*), maidenhair spleenwort (*Asplenium trichomanes*), hairy rock-cress (*Arabis hirsute*), lyre-leaved rock-cress (*A. lyrata*) , early saxifrage (*Saxifraga virginiensis*), and less commonly, slender mountain ricegrass (*Oryzopsis pungens*). Mosses and lichens, especially reindeer lichens (*Cladonia* spp. and *Cladina* spp.), and hairy-cap mosses (*Polytrichum* spp.), are abundant on some sites (Fike 1999). Table 3.2-3 provides a breakdown of herbaceous upland within the footprint of project facilities.

Table 3.2-3

Herbaceous Upland Crossed by the Project Facilities

Project Facility	Acres/Miles Crossed a/	Percent (%) of Facility
H-316 Pipeline		
Pipe Centerline	0.01	≤1%
Permanent Right-of-Way	0.11	≤1%
Temporary Workspace b/	0.55	1%
Subtotal Acres	**0.66**	
H-318 Pipeline		
Pipe Centerline	0.20	5%
Permanent Right-of-Way	1.21	5%
Temporary Workspace	2.57	2%
Subtotal Acres	**3.78**	
H-158 and M-80 Pipelines		
Pipe Centerline	0.00	0%
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	
H-305 and H-319 Pipelines c/		
Pipe Centerline	TBD	TBD
Permanent Right-of-Way	TBD	TBD
Temporary Workspace	TBD	TBD
Subtotal Acres	**TBD**	
Compressor Stations and Interconnect		
Redhook Compressor Station	0.00	%
Pratt Compressor Station	0.07	≤1%
Webster Interconnect	0.00	0%
Subtotal	**0.07**	
Grand Total Miles	**0.21**	
Grand Total Acres	**4.51**	

a/ Pipeline Centerline values equal miles; all other values in the table equal acreages of expected impacts.

b/ Temporary Workspace includes the entirety of the permanent right-of-way as well as temporary access roads and additional temporary workspace.

c/ Details for the H-305 and H-319 pipeline segments will be provided in the final version of Resource Report 3.

3.2.6 Wetlands

Wetlands include emergent herbaceous and woody wetlands. According to the 2011 NLCD, emergent herbaceous wetlands are generally defined as areas where perennial herbaceous vegetation accounts for greater than 80 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water. Woody wetlands are defined as areas where forest or shrub land vegetation accounts for greater than 20 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

The USFWS National Wetland Inventory (NWI) wetlands data by state was used as a supplement to the 2011 NLCD to determine wetland crossings by the Project. The NWI should not be considered a complete inventory, but it can provide more accurate wetland information than NLCD 2011 alone. Field data collected during wetland delineation is preferred and will be provided when available, and included with Equitrans' application to the FERC.

Common woody plant species associated with wetlands in the vicinity of the Project area include black willow (*Salix nigra*), smooth elder (*Alnus serrulata*), speckled alder (*A. incana*), red-willow (*Cornus amomum*), red-osier dogwood (*C. sericea*), and willows (*Salix* spp.). The herbaceous layer is variable, but often includes smartweeds (*Polygonum* spp.), beggar-ticks (*Bidens* spp.), reed canary grass (*Phalaris arundinacea*), and spike-rush (*Eleocharis erythropoda*).

Table 3.2-4 provides a breakdown of NLCD wetlands within the footprint of Project facilities. NLCD data indicated that .04 mile of the H-316 pipeline crosses wetlands; however, a review of NWI data showed that wetland crossings were limited to riverine and freshwater pond wetland types and that the Project facilities, as currently designed, would not impact emergent herbaceous or woody wetlands. This information will be updated with data obtained during field-wetland delineations and updated information will be provided with Equitrans' application to the FERC.

Table 3.2-4

Wetland Crossed by the Project Facilities

Project Facility	Acres/Miles Crossed a/	Percent (%) of Facility
H-316 Pipeline		
Pipe Centerline	0.04	1%
Permanent Right-of-Way	0.21	1%
Temporary Workspace b/	0.42	>1%
Subtotal Acres	**0.63**	
H-318 Pipeline		
Pipe Centerline	0.00	0%
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	
H-158 and M-80 Pipelines		
Pipe Centerline	0.00	0%
Permanent Right-of-Way	0.00	0%
Temporary Workspace	0.00	0%
Subtotal Acres	**0.00**	
H-305 and H-319 Pipelines c/		

Table 3.2-4 Wetland Crossed by the Project Facilities		
Pipe Centerline	TBD	TBD
Permanent Right-of-Way	TBD	TBD
Temporary Workspace	TBD	TBD
Subtotal Acres	**TBD**	
Compressor Stations and Interconnect		
Redhook Compressor Station	0.00	0%
Pratt Compressor Station	0.17	2%
Webster Interconnect	0.00	0%
Subtotal Acres	**0.17**	
Grand Total Miles	**0.04**	
Grand Total Acres	**0.80**	

a/ Pipeline Centerline values equal miles; all other values in the table equal acreages of expected impacts.
b/ Temporary Workspace includes the entirety of the permanent right-of-way as well as temporary access roads and additional temporary workspace.
c/ Details for the H-305 and H-319 pipeline segments will be provided in the final version of Resource Report 3.

3.2.7 Industrial, Commercial, and Residential Uses

Industrial and commercial land as mapped by the 2011 NLCD includes manufacturing or industrial plants, paved areas, landfills, mines, quarries electric power or natural gas utility facilities; developed areas, roads, railroads and railroad yards, and commercial or retail facilities. Residential areas include existing developed residential areas and planned residential developments. This may include large developments, low, medium, and high density residential neighborhoods, urban/suburban residential, multi-family residences, ethnic villages, residentially zoned areas that have been developed or short segments of the route at road crossings with homes near the route alignment.

Table 3.2-5 provides a breakdown of industrial, commercial, and residential land within the footprint of Project facilities.

Table 3.2-5 Industrial, Commercial, and Residential Uses Crossed by the Project Facilities		
Project Facility	**Acres/Miles Crossed a/**	**Percent (%) of Facility**
H-316 Pipeline		
Pipe Centerline	0.24	8%
Permanent Right-of-Way	1.43	8%
Temporary Workspace b/	5.21	10%
Subtotal Acres	**6.64**	
H-318 Pipeline		
Pipe Centerline	0.64	15%
Permanent Right-of-Way	3.86	15%
Temporary Workspace	19.40	18%
Subtotal Acres	**23.26**	
H-158 and M-80 Pipelines		
Pipe Centerline	0.05	20%
Permanent Right-of-Way	0.48	35%

Table 3.2-5

Industrial, Commercial, and Residential Uses Crossed by the Project Facilities

Project Facility	Acres/Miles Crossed a/	Percent (%) of Facility
Temporary Workspace	3.84	39%
Subtotal Acres	**4.32**	
H-305 and H-319 Pipelines c/		
Pipe Centerline	TBD	TBD
Permanent Right-of-Way	TBD	TBD
Temporary Workspace	TBD	TBD
Subtotal Acres	**TBD**	
Compressor Stations and Interconnect		
Redhook Compressor Station	2.55	14%
Pratt Compressor Station	1.10	14%
Webster Interconnect	0.06	5%
Subtotal Acres	**3.71**	
Grand Total Miles	**0.93**	
Grand Total Acres	**37.93**	

a/ Pipeline Centerline values equal miles; all other values in the table equal acreages of expected impacts.
b/ Temporary Workspace includes the entirety of the permanent right-of-way as well as temporary access roads and additional temporary workspace.
c/ Details for the H-305 and H-319 pipeline segments will be provided in the final version of Resource Report 3.

3.2.8 Unique, Sensitive, or Protected Vegetation

This section summarizes unique, sensitive, and protected vegetation crossed by the Project based on a review of information available from Pennsylvania Natural Heritage Program (PANHP) (Table 3.2-6). In April 2015, Equitrans submitted Project review request letters to the federal and state resource agencies, including the USFWS, United States Forest Service, PADCNR, and WVDNR. Consultation with the agencies is ongoing, and copies of all agency correspondence, including consultation letters, electronic mail, phone conversations, and meeting notes, can be found in Appendix 1-G of Resource Report 1. This section will be updated regarding unique, sensitive, or protected vegetation information with the potential to be impacted by the Project upon receipt of agency response to Project review request letters sent out on April 27, 2015.

Table 3.2-6

Special Natural Communities of Special Concern in Allegheny, Greene, and Washington Counties, Pennsylvania With the Potential to Occur in the Project Area

Natural Community Type	Federal Status	State Status	Global Rank a/	State Rank b/	Allegheny County	Greene County	Washington County
Mixed mesophytic forest			GNR	S1S2		X	
Red oak–mixed hardwood forest			GNR	S5		X	
Sycamore–(river birch)–box elder floodplain forest			GNR	S4		X	X
Sugar maple–basswood			GNR	S4			X
Tuliptree–beech–maple forest			GNR	S4	X		
Yellow oak–redbud woodland			GNR	S2		X	X

a/ GNR = Not Ranked (not ranked at global level, applies to natural communities that have been designated at the state level, but not yet reviewed globally)

b/ S#S# = Range Rank (indicates any range of uncertainty about the status of the species or ecosystem); S1 = Critically Imperiled (extreme rarity [often 5 or fewer populations] in the nation or state, or due to some factor(s) such as very steep declines, making it vulnerable to extirpation in the state); S2 = Imperiled (rarity due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors making it very vulnerable to extirpation from the nation or state); S4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors; S5 = Secure (common, widespread, and abundant))

3.2.9 Vegetation Impacts and Mitigation

This section summarizes Project construction and operation impacts on the vegetative cover types. The clearing for the pipelines varies based on the size of the pipe being installed. The H-316 segment will require a 125-foot-wide construction right-of-way, except in wetlands where clearing will be reduced to 75 feet in accordance with the FERC's Procedures. The H-318, M-80, and H-158 segments will require a 100-foot-wide construction right-of-way, except in wetlands where clearing will be reduced to 75 feet in accordance with the FERC's Procedures. The M-80 and H-158 segments will be collocated within a single 100-foot-wide construction right-of-way. Once the pipelines are installed, all segments will maintain a 50-foot-wide permanent right-of-way.

Land requirements for aboveground facilities, which include compressor stations, receiver sites, and metering and regulation facilities, are still in the design phase and will be included in a subsequent filing. Mainline Valve sites will be entirely contained within the pipeline right-of-way and therefore will not require any additional land disturbance. ATWS will be required for construction activities requiring space outside of the construction right-of-way. ATWS will be determined on a site-specific basis, and details on the size and location will be provided in a subsequent filing. Potential pipe storage and contractor staging yards for temporary use during construction will be selected with consideration given to the avoidance of wetlands or other sensitive habitats. Equitrans is in the process of identifying the pipe storage and contractor staging yards along the proposed route and will provide information on the size and location in a subsequent filing.

Construction of the pipeline and aboveground facilities will include short-term, long-term, and permanent impacts on the existing vegetation cover types previously described. To the extent possible, the pipeline has been aligned parallel to existing utility right-of-ways and other linear features, and Equitrans will utilize, to the extent possible, existing access roads including private roads, drives, lanes, farm, or construction access roads to minimize clearing. Details on the location, width and length of access roads are still in the

design phase and will be provided in the final application. Construction of the pipeline adjacent to existing rights-of-way will minimize impacts on vegetation by reducing trampling, compaction, land use change, tree clearing, and stump removal activities.

The pipeline construction right-of-way and temporary workspaces will be cleared of vegetation prior to construction to provide safe working conditions. The construction work space, pipeline centerline, and any ATWS will be identified and staked by the civil survey crew prior to the start of clearing operations. Timber will be cut into usable lengths and stacked adjacent to the right-of-way in accordance with landowner preferences. Brush and slash will be burned, stacked, or chipped. All stumps will be disposed of to the satisfaction of the property owner and/or company representative in accordance with applicable laws including, but not limited to, anti-pollution law, rule or regulation. When feasible, vegetation will be cut to ground level only, leaving the root systems intact. Where needed for erosion control, the FERC's Plan will be implemented along the construction right-of-way and BMPs outlined in the FERC's Plan will be properly maintained throughout construction. BMPs will remain in place until permanent erosion controls are installed and the right-of-way is determined to be successfully revegetated in accordance with the FERC's Plan.

During operation, routine maintenance of the right-of-way is required to allow continued access for routine pipeline patrols, maintaining access in the event of emergency repairs, and visibility of aerial patrols. Following construction, all areas disturbed by construction will be restored and a 50-foot wide permanent right-of-way will be maintained by Equitrans for all pipeline segments. The areas disturbed by construction will be restored to their original grades condition and use, to the greatest extent practicable. However, aboveground facilities will be fenced and converted to industrial use. Restoration will be considered successful if the right-of-way surface condition is similar to adjacent undisturbed lands, construction debris is removed, revegetation is successful, and proper drainage has been restored.

In upland areas, trees or deep-rooted shrubs will be removed from the construction right-of-way and will not be permitted to grow within the 50-foot-wide permanent right-of-way. Depending on the time of year, a seasonal variety, such as ryegrass, may be broadcast or drilled until a more permanent cover can be established. As such, the maintained permanent right-of-way will be subjected to mowing as needed and will result in permanent conversion of some areas of existing upland forested vegetation to herbaceous or scrub vegetation. Within wetlands or adjacent waterbodies, Equitrans will maintain vegetation in a 10-foot corridor centered over the pipeline by mechanical means. Maintenance of vegetation is not expected to be required in agricultural or grazing areas.

Temporary workspaces used during construction (other than gravel or paved areas) will be seeded and allowed to revegetate and will not require further maintenance or disturbance during operation of the pipeline.

Approximately 3.5 miles of the pipeline segments (47%) will cross forested vegetation (upland deciduous and mixed). During construction, approximately 70 acres of forest would be cleared from within the construction right-of-ways and within the footprints of the aboveground facilities. Of that, approximately 42 acres would be within the temporary construction work space and would be allowed to revegetate naturally following construction, and 28 acres within the permanent operational right-of-way would be maintained in a shrub or herbaceous condition.

Along with implementing restoration measures contained in the FERC's Plan and Procedures, Equitrans will re-establish herbaceous vegetative cover by spreading a grass seed and hydro/straw-mulch-mixture over the disturbed surface. The type of seed will be selected to match adjacent cover as recommended by the Wildlife Habitat Council, as otherwise requested by the landowner or land management agency, or as recommended by the county extension agent or other entities with specific expertise in native vegetation. Equitrans will utilize seed mix selection, maintenance vegetation scheduling, and selection of mechanical vegetation maintenance techniques to encourage a low ground cover of native species.

3.3 WILDLIFE

This section describes the wildlife resources potentially affected by the construction and operation of the Project. Wildlife and habitat types typically found in the Project area and methods used to avoid and minimize impacts on these resources are described.

3.3.1 Existing Resources

The entire Project area falls within the boundaries of the Western Allegheny Plateau Ecoregion and includes portions of the Permian Hills and Monongahela Transition Zone level IV ecoregions (USEPA 2003). These ecoregions lie within the Eastern Broadleaf Forest (Oceanic) Province, as described by Bailey (1995). The Western Allegheny Plateau Ecoregion and Eastern Broadleaf Forest (Oceanic) Province include areas with diverse topography on the Appalachian plateau. Vegetation is characterized by a temperate deciduous forest dominated by tall broadleaf trees. Forest vegetation is divided into three major associations: mixed mesophytic, Appalachian oak, and pine-oak. Dominant species include American beech, tuliptree, basswood, sugar maple, buckeye (*Aesculus* spp.), red oak, white oak, and eastern hemlock (Bailey 1995). The land use and land cover is a mosaic of forests, urban-suburban industrial activity, general farms, dairy and livestock farms, pastures, coal mines, oil-gas fields, and urban and industrial activities which are commonly found in valleys along the major rivers (PGC and PFBC 2008). Section 3.2.1 provides additional information on the ecoregions associated with the Project area.

In West Virginia, the Western Allegheny Plateau ecoregion consists of an area extending from the northern panhandle down into the center of the state where it follows the Monongahela Transition Zone in a northeasterly direction. Soils of this ecoregion developed from residuum and support Appalachian oak and mixed mesophytic forests. The current land uses include a mosaic of forests, urban-suburban-industrial activity, agriculture, pastures, coal mines, and oil-gas fields (WVDNR 2005).

The Project traverses through various habitat types within the Western Allegheny Plateau ecoregion. The habitats associated with the Project can be generally categorized as upland deciduous forest, agricultural lands, herbaceous uplands, and wetland. The Project also is located within industrial, commercial, and residential lands. The vegetation impacts associated with the Project are summarized in Section 3.2.9 (Vegetation Impacts and Mitigation) and Tables 3.2-1 through 3.2-5. Each of these habitat types supports a diversity of wildlife species potentially found near the Project area. Species expected to occur within the Project area are typical of the Western Allegheny Plateau Ecoregion and the Eastern Broadleaf Forest (Oceanic) Province and include diverse populations of mammals, birds, fish, reptiles, and amphibians. Appendix 3-B identifies common wildlife species associated with habitats of Pennsylvania and West Virginia. Typical wildlife species specific to the Project area vary by the habitat types crossed, and these are in the process of being identified through ongoing field surveys and agency consultation. Potential wildlife species in each habitat type will be determined once the ongoing field surveys are completed,

including knowledge of common wildlife species provided by biologists familiar with the Project area, and as ongoing agency consultation progresses and correspondence from interested agencies are received for specific wildlife and habitats potentially affected by the Project.

3.3.1.1 Upland Deciduous Forest

Upland forests of Pennsylvania primarily comprise oak-hickory (47%) or northern hardwoods (38%) (PGC and PFBC 2008). Oak species (*Quercus* spp.) and black cherry constitute 39 percent and 8 percent of the commercial forest component, respectively, although red maple represents the largest volume of the commercial forest. A small percentage of this forest type in Pennsylvania comprises conifers, aspen/birch, or elm/ash. Scattered patches of eastern hemlock, white pine (*Pinus strobus*), red pine (*Pinus resinosa*), and red spruce (*Picea rubens*) occur throughout the state with some concentrations present within the Allegheny Plateau.

The Hill Country Deciduous Forests of West Virginia occur in highly dissected, relatively low relief hills that contain a rapid gradation of forest composition resulting from slope position and aspect, making it difficult to accurately classify large forest blocks (WVDNR 2005). Typical forest types include small, intergrading patches of oak-hickory, oak-heath, and mixed mesophytic forest. Vegetation of the Western Allegheny Plateau is primarily hardwoods, which include wet and dry communities including floodplains, cove hardwoods, oak-hickory, and oak-pine.

Oak-hickory forests are the most abundant forest type in Pennsylvania, constituting approximately 46 percent of all forested land (Pennsylvania Envirothon no date). The dominant tree species associated with drier soils along ridges include chestnut oak (*Quercus prinus),* scarlet oak (*Q. coccinea*), and black oak mixed with pignut hickory (*Carya glabra*), black gum (Nyssa sylvatica), sugar maple, and red maple (Fike 1999). The dominant tree species associated with moister soils along lower slopes include northern red oak and white oak, with tuliptree, white pine, sweet birch, red maple, mockernut, and shagbark hickories occurring in significant numbers in many areas. Pines or eastern hemlock generally comprise less than 25 percent of this forest community. Shrubs common on drier upper slopes are generally dominated by mountain laurel, black huckleberry (*Gaylussacia baccata*), and blueberry (*Vaccinium* spp.). Shrubs common in wetter sites include *Viburnum* spp. and spicebush. Herbaceous communities in this forest type are highly variable. Many of the wildflowers bloom in the spring prior to oak leaf-out. Common wildlife in this community includes wild turkey (*Meleagris gallopavo*), blue jay (*Cyanocitta cristata*), eastern gray squirrel (*Sciurus carolinensis*), chipmunk (*Tamias* spp.), and a variety of other wildlife species that feed on the acorns and hickory nuts produced by this mixed oak forest type. White-tailed deer (*Odocoileus virginianus*) also is associated with forested uplands. Herpetofauna common to upland forest communities include eastern box turtle (*Terrapene carolina*), northern copperhead (*Agkistrodon contortrix*), spotted salamander (*Ambystoma maculatum*), red-backed salamander (*Plethodon cinereus*), northern slimy salamander (*Plethodon glutinosus*), and wood frog (*Lithobates sylvatica*).

Forested uplands also serve as important habitat areas for both resident and migrating birds. The great horned owl (*Bubo virginianus*), red-bellied woodpecker (*Melanerpes carolinus*), and blue jay are a few of the resident birds commonly found within this habitat. Migratory songbirds that nest in this habitat include wood thrush (*Hylocichla mustelina*), Acadian flycatcher (*Empidonax virescens*), black-and-white warbler (*Mniotilta varia*), hooded warbler (*Setophaga citrina*), ovenbird (*Seiurus aurocapilla*), and scarlet tanager (*Piranga olivacea*).

Northern hardwood forests are typically dominated by American beech, red maple, sugar maple, and wild black cherry (Fike 1999). Other species generally occurring at less than 40 percent relative cover include sweet birch, yellow birch, paper birch (*Betula papyrifera*), northern red oak, and white ash. Scattered eastern white pine (*Pinus strobus*) and/or eastern hemlock also may be present, but generally do not exceed 25 percent of the canopy cover. Rosebay also may be locally abundant in this forest type, and other common shrubs include witch hazel, moosewood (*Acer pensylvanicum*), witch hobble (*Viburnum lantanoides*), mountain holly (*Ilex montana*), smooth serviceberry, shadbush, and hornbeam. The herbaceous layer is generally sparse, with common species including Canada mayflower (*Maianthemum canadense*), starflower (*Trientalis borealis*), New York fern (*Thelypteris novaboracensis*), fancy fern (*Dryopteris carthusiana*), shining clubmoss (*Lycopodium lucidulum*), teaberry, partridge berry (*Mitchella repens*), wild sarsaparilla (*Aralia nudicaulis*), and Indian cucumber root (Fike 1999).

3.3.1.2 Agricultural Lands

These lands include pastureland, hay fields, and cultivated crops, and can provide habitat for species adapted to living in open areas (e.g., grasslands). Species commonly occurring in agricultural lands include the brown-headed cowbird (*Molothrus ater*), horned lark (*Eremophila alpestris*), mourning dove (*Zenaida macroura*), and barn swallow (*Hirundo rustica*). Seasonally flooded fields can serve as stopover sites for migrating waterfowl such as the ring-necked duck (*Aythya collaris*), lesser scaup (*Aythya affinis*), and hooded merganser (*Lophodytes cucullatus*).

A variety of mammals will utilize agricultural lands for foraging and cover, including white-tailed deer, raccoon (*Procyon lotor*), groundhog (*Marmota monax*), and deer mice (*Peromyscus maniculatus*). Eastern ratsnake (*Pantherophis alleghaniensis*) can take advantage of the large number of rodents and small mammals attracted to these habitats.

3.3.1.3 Herbaceous Upland

These natural to semi-natural grasslands support species adapted to living in open areas that are dominated by grasses and forbs. Common nesting grassland birds include eastern meadowlark (*Sturnella magna*), vesper sparrow (*Pooecetes gramineus*), and grasshopper sparrow (*Ammodramus savannarum*). American kestrels (*Falco sparverius*) and eastern bluebirds (*Sialia sialis*) prefer these open areas and nest where suitable cavities (e.g., snags) are available.

These areas provide an abundance of food and places for basking, which is attractive for reptiles such as the eastern gartersnake (*Thamnophis sirtalis sirtalis*), northern brownsnake (*Storeria dekayi dekayi*), and eastern milksnake (*Lampropeltis triangulum triangulum*).

The groundhog is an open-area specialist that inhabits grassland areas, while mammals such as the meadow vole (*Microtus pennsylvanicus*) and coyote (*Canis latrans*) are generalists that occur in this habitat.

3.3.1.4 Wetlands

Wetlands can be seasonal (e.g., vernal pools) or perennial, making them attractive to a wide-range of species, including those found in forested or more open habitats.

A variety of resident and migratory birds are found in wetlands, including common yellowthroat (*Geothylpis trichas*), yellow warbler (*Setophaga petechia*), tree swallow (*Tachycineta bicolor*), red-winged

blackbird (*Agelaius phoeniceus*), swamp sparrow (*Melospiza georgiana*), green heron (*Butorides virescens*), and wood duck (*Aix sponsa*).

Wetlands support a diversity of herpetofauna, including spring peeper (*Pseudocris crucifer*), upland chorus frog (*P. feriarum*), green frog (*Lithobates clamitans*), bullfrog (*Lithobates catesbeianus*), eastern red-spotted newt (*Notophthalmus viridescens*), four-toed salamander (*Hemidactylium scutatum*), queensnake (*Regina septemvittata*), snapping turtle (*Chelydra serpentina*), and eastern painted turtle (*Chrysemys picta*). Salamanders in the family Ambystomatidae, such as the spotted salamander and Jefferson salamander (*Ambystoma jeffersonianum*), spend most of their lives underground, but come out in spring following rains to migrate to vernal pools and other wetlands to breed.

Muskrat (*Ondatra zibethiucs*) and American beaver (*Castor canadensis*) are both indicators of wetlands and play important roles in the maintenance of this habitat. Other mammals found in wetlands include the raccoon, Virginia opossum (*Didelphis virginiana*), and white-tailed deer.

3.3.2 Significant or Sensitive Wildlife Habitat

Based on a review of USFWS information, no Project facilities would be located within a USFWS National Wildlife Refuge (USFWS no date a; USFWS no date b). The Project is located in Pennsylvania Wildlife Management Units 2A and 2b; however, a review of PGC mapping for State Game Lands did not identify any special wildlife areas within the Pennsylvania portion of Project area.

Three West Virginia wildlife management areas are located within 10 miles of the Webster Interconnect, including Lewis Wetzel Wildlife Management Area, Lantz Farm and Nature Preserve, and Cecil H. Underwood Wildlife Management Area (WVDNR 2003b). Lewis Wetzel Wildlife Management Area and Lantz Farm and Nature Preserve are located adjacent to each other in Jacksonburg, West Virginia. Lewis Wetzel Wildlife Management Area is located approximately 4 miles southwest of the Webster Interconnect site, and consists of moderate–steep terrain, ranging in elevation from 736 to 1,560 feet (WVDNR 2003b). The area is heavily forested and is dominated by oak–hickory and cove hardwood. Game hunting is available for deer, grouse (family Phasianidae), raccoon, squirrel, and turkey; and game fish within the South Fork of Fishing Creek includes smallmouth bass (*Micropterus dolomieu*), spotted bass (*Micropterus punctulatus*), and stocked trout. Lantz Farm and Nature Preserve is located approximately 6 miles west of the Webster Interconnect site, and consists of gently rolling to moderately steep terrain ranging in elevation from 736 to 1,475 feet (WVDNR 2003b). Habitat is dominated by old-growth oak–hickory, cove hardwood forest, and large open fields. The preserve allows hunting for deer, squirrel, and turkey. Fishing areas include the South Fork of Fishing Creek, and game fish species includes smallmouth bass, largemouth bass (*Micropterus salmoides*), spotted bass, bluegill (*Lepomis macrochirus*), channel catfish (*Ictalurus punctatus*), sunfish (*Lepomis* spp.) and stocked trout. The Cecil H. Underwood Wildlife Management Area is located approximately 10 miles north of the Webster Interconnect, and is situated along the Wetzel-Marshall county line in West Virginia (WVDNR 2003b). This Wildlife Management Area is located along the West Virginia Fork of Fish Creek and contains steep–moderate terrain, with elevations of 800 to 1,510 feet. Habitat within this Wildlife Management Area is dominated by oak–hickory and cove hardwood, and serves as a hunting area for deer, grouse, squirrel, and turkey. Game fish within Fish Creek includes rock bass (*Ambloplites rupestris*), smallmouth bass, and sunfish. The Mobley Tap will be addressed in the final version of Resource Report 3.

The Project does cross any state or federal forests. A review of online databases and resources did not identify any privately managed conservation lands within vicinity of the Project area. Completion of the field surveys and agency consultation process will confirm the Project does not cross any significant or sensitive wildlife habitats.

3.3.3 Migratory Birds

The Migratory Bird Treaty Act of 1918 (MBTA) (16 United States Code [USC] 703-711) affords protection to all birds listed in 50 CFR 10.13 (78 *Federal Register* [FR] 65844 65864). In addition to the MBTA, the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) are protected under the Bald and Golden Eagle Protection Act of 1940 (Eagle Act) (16 USC 668-688d). Executive Order 13186 directs federal agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations and to avoid and minimize these adverse effects through enhanced collaboration with the USFWS. Executive Order 13186 states that emphasis should be placed on species of concern, priority habitats, and key risk factors. It further states that particular focus should be given to addressing population-level impacts over individual impacts.

According to the USFWS Birds of Conservation Concern (BCC) 2008 report, the Project is located within Bird Conservation Region (BCR) 28 (Appalachian Mountains). Each BCR maintains a list of BCC species, including migratory and non-migratory birds that are of conservation concern and are considered species that, without additional conservation measures, may become candidates for the Endangered Species Act (ESA) (USFWS 2008a). A list of the 18 BCC species that are associated with the Appalachian Mountains BCR crossed by the Project and that could potentially occur in the Project area was obtained from the USFWS 2008 report and a Project query was submitted to the USFWS' Information, Planning, and Conservation (IPaC) decision support system, accessed May 27, 2015 (see Table 3.4-4 in Section 3.4).

The Important Bird Areas (IBA) Program is a global initiative developed through Birdlife International to identify and conserve critical areas associated with birds and other biodiversity. The National Audubon Society serves as the Partner of Birdlife International to administer the IBA Program in the United States. The Audubon's IBA online mapping application was accessed on May 31, 2015, to determine if the Project would intersect any IBAs. The Project does not cross any IBAs (Audubon no date a; Audubon no date b).

On March 30, 2011, the USFWS and FERC entered into a voluntary Memorandum of Understanding that focuses on avoiding or minimizing adverse effects on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the two federal agencies. The Memorandum of Understanding does not authorize the take of migratory birds or waive legal requirements under the MBTA, Eagle Act, ESA, or any other statutes.

Construction activities occurring during the nesting season for migratory birds (approximately April 1 to August 31) could result in direct and indirect effects on migratory birds. Some potential effects caused by Project construction may include habitat loss, disruption in foraging activities, and destruction or abandonment of active nests. The proposed construction areas represent a small portion of the available nesting habitat within the immediate vicinity. Equitrans will implement measures during Project development, construction, and operation to limit effects to migratory birds, including:

- Routing Project facilities to avoid sensitive resources where possible;
- Collocating Project facilities with existing pipeline or utility rights-of-way where feasible;
- Adhering to measures outlined in the Project's E&SCP during construction; and
- Limiting clearing of vegetation and routine right-of-way maintenance during the nesting season for most native birds (April 1 to August 31) in accordance with the FERC's Plan.

The USFWS Pennsylvania Field Office Pennsylvania Bald Eagle Nest Locations and Buffer Zones map (USFWS 2014a) did not identify any bald eagle nests in the Project area; however, the USFWS IPaC database review for the Project area reports the bald eagle as a potential year-round resident species. No bald eagle nest sites have been identified for the Webster Interconnect area of the Project. Consultation with USFWS for this Project is ongoing, and will confirm no bald eagle nests or bald eagle concentration areas are known to occur in the Project area. Although eagle nests are not anticipated to be identified within the Project survey corridor, any nest encountered will be recorded. Construction activities are not likely to disturb nesting bald eagles since the Project does not cross any known eagle concentration areas.

3.3.4 Wildlife Impacts and Mitigation

Temporary wildlife impacts are those associated with disturbance activities during Project construction, whereas permanent impacts are associated with conversion of forested habitats to scrub-shrub or herbaceous as a result of recurring maintenance of the permanent right-of-way. Indirect, short-term impacts to wildlife associated with construction noise and increased human activity is expected to be temporary, and could result in abandoned or delayed reproductive efforts, displacement from the Project area, and complete avoidance of active work areas. Direct mortality to less mobile species of small wildlife could occur during clearing and grading operations.

Effects on non-forested habitat impacted during construction will be temporary, and these areas are expected to recover quickly once construction is completed and restoration is initiated. The temporary effects on these habitats will have little or no long-term impact on individual wildlife species or wildlife populations. Temporary loss of herbaceous cover during the construction and installation of the pipeline will potentially reduce habitat normally utilized by insect pollinators, such as bees and butterflies, or by ground nesting songbirds. By implementing the FERC's Plan and Procedures and incorporating native grasses and wildflowers into seed mixtures during restoration, herbaceous habitat is expected to return to pre-construction conditions.

Forested habitats, both upland and wetland, will be impacted to a greater extent due to the long-term conversion of these wooded habitats to earlier successional stage, grassland/scrub-shrub in the permanent, maintained right-of-way. Tree removal associated with Project construction will permanently reduce available nesting, roosting, and denning sites for numerous woodland wildlife species. Continuous tracts of forest will be fragmented and sharp edges created at the interface of intact forest and the permanent right-of-way will deprive interior forest wildlife species, such as warblers, salamanders, and many woodland flowers, of the necessary shade and humidity that only deep, canopied-forest environments can provide. New corridors traversing forested tracts may inhibit movement of forest interior species which are more reluctant to cross large openings to due to the increased risk of predation (Bennett 2003).

The permanent, maintained right-of-way will provide a travel corridor for many wildlife species, such as bats or birds of prey, and may provide food, shelter, and breeding habitat for species that prefer open

herbaceous or scrub-shrub early successional habitats to forested habitats. Maintained utility rights-of-way are often heavily used by many locally important game species including white-tailed deer and American black bear (*Ursus americanus*).

Along with implementing restoration measures contained in the FERC's Plan and Procedures, Equitrans anticipates restoration of the pipeline right-of-way using native seed mixes. A key component of the native seed mixes will include native flowering plants for the express benefit of native and domestic pollinators (bees).

3.4 ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

The federal ESA of 1973 (16 USC A-1535-1543, Public Law 93-205) provides for the listing, conservation, and recovery of endangered and threatened species of plants and wildlife. Under the ESA, plants and animals provide aesthetic, ecological, educational, historic, and scientific value to the United States. The USFWS is mandated to monitor and protect all federally listed freshwater and terrestrial species, whereas the NMFS is responsible for marine species. A federally listed endangered species is any species which is in danger of extinction throughout all or a significant portion of its range. A federally listed threatened species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

ESA also provides protection for "critical habitat" which, as defined by the USFWS, is (1) specific areas within the geographical area occupied by the species, at the time of listing, on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protections; and (2) specific areas outside the geographical area occupied by the species at the time it is listed and are determined to be areas essential for the conservation of the species.

Under provisions of the ESA, all states were granted the authority to enact their own endangered species protection policies. Pennsylvania's Wildlife Resource Conservation Act Title 34 Pennsylvania Consolidated Statutes Annotated (Pa. C.S.A.) §2167; 34 Pa. C.S.A. §2924; 34 Pa. C.S.A. §925; and 32 Pennsylvania Statutes §5301–14 is the set of Pennsylvania laws that govern the state's endangered species provisions. Section 2167 makes it unlawful for any person to bring into or remove from this Commonwealth, or to possess, transport, capture or kill, or attempt, aid, abet or conspire to capture or kill, any wild bird or wild animal, or any part thereof, or the eggs of any wild bird, which are endangered or threatened species. Any commerce in endangered species also is prohibited. For a first violation, a person may have his or her hunting privileges revoked for 7 years. In Pennsylvania, responsibility for protection of listed species is divided between PADCNR (flora); PGC (wild birds and mammals; and PFBC (fish, reptiles, amphibians and aquatic invertebrates).

West Virginia currently does not have state laws pertaining to threatened and endangered species. Rare species are assigned "State Ranks" by the West Virginia Natural Heritage Program and range in value from S1 (critically imperiled) to S5 (Secure). Species with state ranks of S1, S2 (imperiled), and S3 (vulnerable) are tracked by the West Virginia Natural Heritage Program.

Equitrans reviewed USFWS' IPaC system and is in the process of consulting with federal and state agencies (USFWS, PGC, PFBC, PADCNR, and WVDNR) to request any known federally listed, state-listed or rare species records within the Project area. Qualified biologists familiar with the Project area are in the process

of reviewing information and conducting field surveys to further refine the lists of protected species that could potentially occur within the Project area. As field surveys are completed and agency consultation progresses, results and agency correspondence will determine if Equitrans will be required to conduct species-specific wildlife surveys in the Project area.

3.4.1 Protected Aquatic and Marine Species

The Project is located within western Pennsylvania and northern West Virginia, and is not in proximity to aquatic and marine resources under the jurisdiction of NMFS. Agency consultation with NMFS initiated for the Project is ongoing and this consultation will serve to confirm there are no threatened or endangered species under NMFS jurisdiction that are known to occur in the Project area. According to the NMFS online EFH mapper tool, no EFH occurs within the Project area. None of the waterbodies crossed by the Project contain or have the potential to support species managed by the NMFS. The Project occurs well inland of saltwater or tidal waters, and a review of online databases and resources did not identify any anadromous or diadromous fish migration routes that would be crossed by the Project. As such, protected marine species are not discussed further.

A review of spatial county data provided by state natural heritage programs and the USFWS IPaC database, identified seven federally listed snail and mussel species (Table 3.4-1) that have the potential to occur in freshwater systems associated with the Project area. No special status fish species have been identified that could potentially occur within freshwater systems in the Project area (Table 3.4-2).

Table 3.4-1

Terrestrial Invertebrate Wildlife Species of Special Concern in Allegheny, Greene, and Washington Counties, Pennsylvania With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status	State Status	Global Rank a/	State Rank b/	Allegheny County	Greene County	Washington County
Banded pennant	*Celithemis fasciata*			G5	S1		X	
Blue-tipped dancer	*Argia tibialis*			G5	S2	X	X	
Bronze copper	*Lycaena Hyllus*			G4G5	S3			X
Comet darner	*Anax longipes*			G5	S2	X		
Common roadside skipper	*Amblyscirtes vialis*			G4	S2		X	
Common sanddragon	*Progomphus obscurus*			G5	S2	X		
Coral hairstreak	*Satyrium titus*			G4G5	S3		X	
Double-striped bluet	*Enallagma basidens*			G5	S3S4		X	
Elusive clubtail	*Stylurus notatus*			G3	SH	X		
Falcate orangetip	*Anthocharis midea*			G4G5	S3		X	
Giant swallowtail	*Papilio cresphontes*			G5	S2	X		
Green-faced clubtail	*Gomphus viridifrons*			G3G4	S1S2	X		
Leonard's skipper	*Hesperia leonardus*			G4	S3		X	
Midland clubtail	*Gomphus fraternus*			G5	S2S3	X		
Mocha emerald	*Somatochlora linearis*			G5	S1		X	
Northern metalmark	*Calephelis borealis*			G3G4	S2		X	
Pipevine swallowtail	*Battus philenor*			G5	S3		X	
Regal fritillary	*Speyeria idalia*			G3	S1	X	X	
Regal moth	*Citheronia regalis*			G4G5	SU		X	
Royal river cruiser	*Macromia taeniolata*			G5	S1	X		
Russet-tipped clubtail	*Stylurus plagiatus*			G5	S1	X		
Silvery checkerspot	*Chlosyne nycteis*			G5	S3S4		X	

Table 3.4-1

Terrestrial Invertebrate Wildlife Species of Special Concern in Allegheny, Greene, and Washington Counties, Pennsylvania With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status	State Status	Global Rank a/	State Rank b/	Allegheny County	Greene County	Washington County
Six-banded longhorn beetle	*Dryobius sexnotatus*			GNR	SH	X	X	X
Swarthy skipper	*Nastra lherminier*			G5	S3		X	
Taper-tailed darner	*Gomphaeschna antelope*			G4	SH	X		
West Virginia white	*Pieris virginiensis*			G3?	S2S3		X	

a/ G#G# = Range Rank (indicates range of uncertainty about the exact status of a taxon or ecosystem type); G#? = not yet ranked or assigned rank is uncertain; GNR = Not Ranked (not ranked at global level, applies to natural communities that have been designated at the state level, but not yet reviewed globally); G3 = Vulnerable (at moderate risk of extinction due to a restricted range, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors); G4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors); G5 = Secure (common, widespread, and abundant)

b/ S#S# = Range Rank (indicates any range of uncertainty about the status of the species or ecosystem); SH = Possibly Extinct (Historical) (historically in the nation or state, and there is some possibility that it may be rediscovered; presence may not have been verified in the past 20–40 years; could become Possibly Extinct without such a 20–40 year delay if the only known occurrences in the nation or state were destroyed, or if it had been extensively and unsuccessfully looked for; reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences); SU = Unknown (currently unrankable due to lack of information or due to substantially conflicting information about status or trends); S1 = Critically Imperiled (extreme rarity [often 5 or fewer populations] in the nation or state, or due to some factor(s) such as very steep declines, making it vulnerable to extirpation in the state); S2 = Imperiled (rarity due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors making it very vulnerable to extirpation from the nation or state); S3 = Vulnerable (restricted range in the nation or state, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors making it vulnerable to extirpation); S4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors)

Table 3.4-2

Fish Species of Conservation Concern in Allegheny and Greene Counties, Pennsylvania With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status	State Status a/	Global Rank b/	State Rank c/	Allegheny County	Greene County	Washington County
Bluebreast darter	*Etheostoma camurum*		PT	G4	S4	X		
Brindled madtom	*Noturus miurus*		PT	G5	S2	X	X	
Bullhead minnow	*Pimephales vigilax*			G5	SX	X		
Channel darter	*Percina copelandi*			G4	S4	X		
Ghost shiner	*Notropis buchanani*			G5	S1	X		
Gravel chub	*Erimystax x-punctatus*		PE	G4	S1	X		
Longhead darter	*Percina marcocephala*			G3	S3	X		X
Longnose gar	*Lepisosteus osseus*			G5	S4S5	X	X	
Mooneye	*Hiodon tergisus*			G5	S4	X		
Ohio lamprey	*Ichthyomyzon bdellium*		PC	G3G4	S3S4	X		
River redhorse	*Moxostoma carinatum*			G4	S3S5	X		
Skipjack herring	*Alosa chrysochloris*			G5	S4	X		
Smallmouth buffalo	*Ictiobus bubalus*			G5	S4	X		X
Southern redbelly dace	*Phoxinus erythrogaster*		PT	G5	S1	X		
Spotted sucker	*Minytrema melanops*		PT	G5	S1	X	X	
Tippecanoe darter	*Eteostoma tippecanoe*		PT	G3G4	S3S4	X		
Warmouth	*Chaenobryttus gulosus*		PE	G5	S3	X	X	

a/ PC = animals that could become endangered or threatened in the future, are uncommon with restricted distribution, or at risk because of certain aspects of their biology; PE = Pennsylvania Endangered; PT = Pennsylvania Threatened

b/ G#G# = Range Rank (indicates range of uncertainty about the exact status of a taxon or ecosystem type); G3 = Vulnerable (at moderate risk of extinction due to a restricted range, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors); G4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors); G5 = Secure (common, widespread, and abundant)

c/ S#S# = Range Rank (indicates any range of uncertainty about the status of the species or ecosystem); SX = Presumed Extinct (believed to be extirpated from the nation or state; not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered); S1 = Critically Imperiled (extreme rarity [often 5 or fewer populations] in the nation or state, or due to some factor(s) such as very steep declines, making it vulnerable to extirpation in the state); S2 = Imperiled (rarity due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors making it very vulnerable to extirpation from the nation or state); S3 = Vulnerable (restricted range in the nation or state, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors making it vulnerable to extirpation); S4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors); S5 = Secure (common, widespread, and abundant)

Federally listed freshwater musselss that have the potential to occur in the Project area include:

- clubshell (*Pleurobema clava*) (Endangered)
- fanshell (*Cyprogenia stegaria*) (Endangered)
- orange-foot pimpleback (*Plethobasus cooperianus*) (Endangered)
- pink mucket (*Lampsilis abrupta*) (Endangered)
- rabbitsfoot (*Quadrula cylindrica cylindrica*) (Threatened)
- sheepnose mussel (*Plethobasus cyphyus*) (Endangered)
- snuffbox (*Epioblasma triquetra*) (Endangered)

(a) Clubshell

Clubshell is a small (up to 2 inches), thick, freshwater mussel that is a tan in color with green rays, particularly in juveniles (NatureServe Explorer 2015a). Its shell is elongate, triangular, and has a distinctive wedge-shape. The shell is thickened anteriorly, with the posterior margin being thin and fragile, even in large specimens. Periostracum (outer "skin" layer) of juveniles is yellow, becoming darker with age, with dark and pronounced growth annuli. Very old individuals may be nearly black. Based upon counts of annular growth lines, this species may reach 30 or more years in age; however, little is known about the age range of reproductive activity. Potential host fish are striped shiner (*Luxilus chrysocephalus*), blackside darter (*Percina maculata*), central stoneroller (*Campostoma anomalum*), and logperch (*Perca caprodes*); however, if host fish are absent, even large, healthy populations could be threatened by extinction. Primary habitats include small–medium-sized rivers and streams, where it occurs deeply buried in sand and fine gravel substrate of riffle/run flows of 1.5 feet or less in depth. It is generally associated with clean, coarse sand and gravel in runs, often found just downstream of a riffle, and it does not tolerate mud or slackwater conditions.

An effects determination and mitigation measures (if necessary) will be determined upon completion of field surveys. Results of field surveys, effects determination, and mitigation measures (if necessary) will be included in Resource Report 3 included with Equitrans' application to FERC.

(b) Fanshell

Fanshell is thought to be extirpated from Pennsylvania (NatureServe Explorer 2015b). This mussel is round in shape, with numerous pustules, elevated growth lines, and broken green rays and grows up to 3 inches in length. Periostracum is usually greenish yellow, with a pattern of dark green rays formed by numerous smaller broken lines or dots. One of its defining characteristics is a white nacre (shell building material) except posteriorly, where it is iridescent. It is thought to be a long-term breeder, holding glochidia (microscopic larval stage of some freshwater mussels) over the winter for release in the spring. Potential glochidial hosts include banded sculpin (*Cottus carolinae*), mottled sculpin (*C. bairdi*), greenside darter (*Etheostoma blennioides*), Tennessee snubnose darter (*E. simoterum*), banded darter (*E. zonale*); tangerine darter (*Percina aurantiaca*), blotchside logperch (*P. burtoni*), logperch, and Roanoke darter (*P. roanoka*). Typical habitats include shallow and deep water of big–medium rivers with gravel substrates and a strong current.

(c) Orange-foot Pimpleback

The orange-foot pimpleback is a freshwater mussel that is thought to be extirpated from Pennsylvania (NatureServe Explorer 2015c). It has pustules only on the posterior three-fourths of the shell and has an orange foot. The shell is thick, solid, round or slightly elongated, and moderately inflated to compressed. Its length is up to 4 inches. Its glochidial host is not known. It occurs in big–medium rivers, with moderate gradient, and riffle habitat. It occurs in sand, gravel, and cobble substrates in riffles and shoals in deep water and steady currents, as well as some shallower shoals and riffles.

(d) Pink Mucket

Pink mucket is a freshwater mussel that occurs within benthic habitats of large and medium river systems, with moderate–high gradients and riffle habitats; it also occurs in shallow and deep lacustrine waters (NatureServe Explorer 2015d). It is approximately 10.5 centimeters in length and has a thick periostracum that is yellowish brown–chestnut brown in mature individuals, with rays that are usually absent. Adults feed on detritus, and immature forms are parasitic on host fish. This species has a long-term breeding cycle (bradytictic), with females becoming gravid in August and glochidia found in females in September, which are released the following June. Potential glochida fish hosts include sauger (*Stizostedion canadense*), freshwater drum (*Aplodinotus grunniens*), largemouth bass, smallmouth bass, spotted bass and walleye (*Stizostedion vitreum*). Females of the genus *Lampsilis* have a mantle flap which may attract host fish and includes an eyespot, which could make the mantle flap appear even more fish-like. This species is likely sessile, with limited mobility in the substrate, although passive downstream movement may occur when they are displaced from the substrate, such as during flood events. Major dispersal occurs when glochidia are encysted on host fish. This species generally occurs in low numbers where found and is thought to be extirpated from Pennsylvania.

(e) Rabbitsfoot

Rabbitsfoot is a freshwater mussel that occurs within benthic habitats of small to medium river systems, with moderate–swift currents, and inhabits bars or gravel/cobble close to fast current in smaller streams, but are often found fully exposed lying on their sides on top of the substrate (NatureServe Explorer 2015e). It is has a long shell that is rectangular in shape with pustules and chevron marks. Potential glochida fish hosts include blacktail shiner (*Cyprinella venusta*), rainbow darter (*Etheostoma caeruleum*) and striped shiner. This species is thought to be long-lived, potentially living as long as 100 years.

(f) Sheepnose mussel

The sheepnose mussel is a medium-sized freshwater mussel found within midwest and southeastern states; however, it has been extirpated from about two-thirds of the streams in which it historically was known to occur (USFWS 2015). It grows to about 5 inches in length and occurs in large rivers and streams in shallow areas with moderate to swift currents and coarse sandy or gravel substrates. Potential host fish species include sauger, fathead minnow (*Pimephales promelas*), creek chub (*Semotilus atrromaculatus*), central stoneroller, and brook stickleback (*Culaea inconstans*). They are suspension feeders, siphoning water and feeding on suspended algae, detritus and microscopic organisms.

(g) Snuffbox

The snuffbox is a small to medium-sized freshwater mussel typically characterized as having a yellow, green, or brown shell interrupted by green rays or blotches. The shell darkens with age. Females have a typically triangular-shaped shell whereas males are more oblong or oval. Adults burrow deep within sand, gravel, or cobble substrates, preferably within big–medium rivers within riffle habitat (NatureServe Explorer 2015f). The snuffbox usually occurs deeply buried in stony or sandy bottoms with swift currents. Potential fish species hosts include the Ozark sculpin (*Cottus hypselarus*), banded sculpin, mottled sculpin, blackspotted topminnow (*Fundulus olivaceous*), logperch, and blackside darter. The snuffbox was listed as federally endangered on February 14, 2012.

An effects determination and mitigation measures (if necessary) will be determined upon completion of field surveys. Results of field surveys, effects determination, and mitigation measures (if necessary) will be included in Resource Report 3 included with Equitrans' application to the FERC.

3.4.2 Protected Plant Species

Project field surveys and consultation with USFWS, PGC, PFBC, PADCNR, and WVDNR is ongoing. Site-specific Project information contained in this section regarding protected plant species will be updated as field surveys are completed, and the agency consultation process progresses and agency correspondence regarding protected plant species information is received.

A review of PANHP data identified one federally listed plants species, the small whorled pogonia (*Isotria medeoloides*) (Table 3.4-3), that has the potential to occur in the Project area. Small whorled pogonia is federally threatened and has the potential to occur in the Greene County area of the Project. An effects determination and mitigation measures (if necessary) will be determined upon completion of field surveys and the agency consultation process. Results of field surveys, effects determination, and mitigation measures (if necessary) will be updated and included in Resource Report 3 included with Equitrans' application to the FERC.

Table 3.4-3

Plant Species of Special Concern in Allegheny, Greene, and Washington Counties, Pennsylvania With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status a/	State Status b	Global Rank c/	State Rank d/	Allegheny County	Greene County	Washington County
Adder's tongue	*Ophioglossum vulgatum*		PX	G5	S4	X	X	
American beakgrain	*Diarrhena americana*		N	G4G5	S1		X	X
American gromwell	*Lithospermum latifolum*		PE	G4	S4	X	X	X
Balsam poplar	*Populus balsamifera*		PE	G5	S1	X		X
Beardtongue	*Penstemon laevigatus*		N	G5	S3	X	X	X
Bicknell's hoary rockrose	*Helianthemum bicknelli*		PE	G5	S2	X		
Blue false-indigo	*Baptisia australis*		PT	G5	S2	X		X
Blue monkshood	*Aconitum uncinatum*		PT	G4	S2		X	
Brainerd's hawthorne	*Crataegus brainerdii*		TU	G5	SU	X		
Broadleaved willow	*Salix myricoides*		N	G4	S2	X		
Brown sedge	*Carex busbaumii*		TU	G5	S3	X		
Buffalo clover	*Trifolium reflexum*		PX	G3G4	SX	X		
Canadian milkvetch	*Astragalus canadensis*		TU	G5	S2	X		X
Canadian summer bluet	*Houstonia canadensis*			G4G5	S1		X	X
Carey's sedge	*Carex careyana*		PE	G4G5	S1	X		
Carolina bugbane	*Trautvetteria caroliniensis*		PR	G5	S4	X		
Carolina willow	*Salix caroliniana*		N	G5	S1	X	X	X
Cattail sedge	*Carex typhina*		PE	G5	S2	X		
Climbing rose	*Rosa setigera*		N	G5	S1	X		
Clinton's wood fern	*Dryopteris clintoniana*		N	G5	S2	X		
Cluster fescue	*Festuca paradoxa*		PE	G5	S1	X		
Coastal Juneberry	*Amelanchier obovalis*		TU	G4G5	S1	X		
Common hoptree	*Ptelea trifoliate*		PT	G5	S2	X		
Common northern sweet grass	*Hierochloe hirta* ssp. *artica*		N	G5T5	S1	X		
Common shootingstar	*Dodecatheon meadia*		PE	G5	S1	X		
Cranefly orchid	*Tipularia discolor*		PR	G4G5	S3		X	X
Creeping Saint John's wort	*Hypericum adpressum*		PX	G3	SX	X		
Crepis rattlesnakeroot	*Prenanthes crepidenia*		PE	G4	S4	X		X
Crested dwarf iris	*Iris cristata*		PE	G5	S1	X	X	
Declined trillium	*Trillium flexipes*		TU	G5	S2	X		X
Drummond's aster	*Symphyotrichum drummondii*		N	G5	S1	X		X

Table 3.4-3

Plant Species of Special Concern in Allegheny, Greene, and Washington Counties, Pennsylvania With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status a/	State Status b	Global Rank c/	State Rank d/	Allegheny County	Greene County	Washington County
Dwarf juniper	*Juniperus communis* var. *depressa*			G5T5	S1S2			X
Eastern blue-eyed grass	*Sisyrinchium atlanticum*		PE	G5	S1	X		
Eastern coneflower	*Rudbeckia fulgida*		N	G5	S3	X		
Elephant's foot	*Elephantopus carolinianus*		PE	G5	S4		X	X
False gromwell	*Onosmodium molle* var. *hispidissimum*		PE	G4G5T4	S1	X		X
Featherbells	*Stenanthium gramineum*		N	G4G5	S3	X		X
Field dodder	*Cuscuta pentagona*		N	G5	S2	X		
Forked rush	*Juncus dichotomus*		PE	G5	S1	X		
Four-angled spikerush	*Eleocharis quadrangulata*		PE	G4	S1	X		X
Fringe-tree	*Chionanthus virginicus*		N	G5	S3	X	X	
Glade fern	*Diplazium pycnocarpon*			G5	SNR		X	X
Graybark grape	*Vitis cinerea* var. *baileyana*		TU	G4G5TNR	SH	X	X	X
Great Indian-plantain	*Arnolossum reniforme*		N	G4	S1	X	X	X
Goldenseal	*Hydrastis canadensis*		PV	G4	S4	X	X	X
Hairy leafcup	*Smallanthus uvedalius*		N	G4G5	S3	X	X	X
Harbinger-of-spring	*Erigenia bulbosa*		PT	G5	S4	X	X	X
Hartford fern	*Lygodium palmatum*		PR	G4	S4			X
Hazel dodder	*Cuscuta coryli*		TU	G5?	SH	X		
Heartleaf hedgenettle	*Stachys cordata*		PE	G5?	S1		X	X
Heartleaf meehania	*Meehania cordata*		TU	G5	S1	X	X	X
Hoary puccoon	*Lithospermum canescens*		N	G5	S2	X		
James' sedge	*Carex jamesii*			G5	S4			X
Illinois pondweed	*Potamogeton illinoisensis*		TU	G5	S4	X		
Large-flowered marshallia	*Marshallia grandiflora*		PE	G2	S1	X		
Large-leaved waterleaf	*Hydrophyllum macrophyllum*		PE	G5	S4		X	
Lance fog-fruit	*Phyla lanceolata*		N	G5	S1S2	X		
Limestone petunia	*Ruellia strepens*		PT	G4G5	S2	X	X	X
Little lady's tresses	*Spiranthes tuberosa*		TU	G5	S1		X	
Lobed spleenwort	*Asplenium pinnatifidum*		N	G4	S3		X	
Meadow willow	*Salix petiolaris*		TU	G5	S4	X		

Table 3.4-3

Plant Species of Special Concern in Allegheny, Greene, and Washington Counties, Pennsylvania With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status a/	State Status b	Global Rank c/	State Rank d/	Allegheny County	Greene County	Washington County
Mistflower	*Conoclinium coelestinum*		N	G5	S4	X	X	X
Netted chainfern	*Woodwardia areolata*		N	G5	S2		X	
Nits-and-lice	*Hypericum drummondii*		TU	G5	S1	X		X
Nodding trillium	*Trillium cernuum*		N	G5	S2	X		
Northern water-milfoil	*Myriophyllum sibiricum*		PE	G5	S1	X		
Northern water-plantain	*Alisma triviale*		PE	G5	S1	X		
Oblique milkvine	*Matelea obliqua*		PE	G4?	S1	X		
October lady's tresses	*Spiranthes ovalis*		PE	G5?	S1		X	
Ohio spiderwort	*Tradescantia ohiensis*		TU	G5	S4	X		
Passionflower	*Passiflora lutea*		PE	G5	S2	X	X	X
Pinnate coneflower	*Ratibida pinnata*		TU	G5	S1	X		X
Prickly-pear cactus	*Opuntia humifusa*		PR	G5	S3	X		
Purple fringeless orchid	*Platanthera peramoena*		TU	G5	S2	X		
Purple milkweed	*Asclepias purpurascens*			G5?	S4			X
Purple rocket	*Iodanthus pinnatifidus*		PE	G5	S1	X	X	X
Puttyroot	*Aplectrum hyemale*		PR	G5	S3	X	X	X
Queen-of-the-prairie	*Filipendula rubra*		TU	G4G5	S1S2	X		
Red-fruit hawthorn	*Crataegus pennsylvanica*		N	G3Q	S2S3	X		
Riverweed	*Podostemum ceratophyllum*		TU	G5	S4	X		
Rock skullcap	*Scutellaria saxatilis*		TU	G3	S1	X	X	
Roundleaf groundsel	*Packera obovate*			G5	SNR	X		
Scarlet ammannia	*Ammannia coccinea*		PE	G5	S2	X		
Scarlet Indian-paintbrush	*Castilleja coccinea*		TU	G5	S2	X		
Sedge	*Carex shortiana*		N	G5	S3	X		X
Serviceberry	*Amelanchier humilis*		TU	G5	S1	X		X
Shale barren pussytoes	*Antennaria virginica*		N	G4	S3	X		
Shellbark hickory	*Carya laciniosa*		N	G5	S3S4		X	X
Shining lady's tresses	*Spiranthes lucida*		N	G5	S3	X		
Showy goldenrod	*Solidago speciose* var. *speciose*		N	G5T5?	S2	X		
Showy lady's slipper	*Cypripedium reginae*		PT	G4	S1		X	
Singlehead pussytoes	*Antennaria solitaria*		TU	G5	S1		X	

Table 3.4-3

Plant Species of Special Concern in Allegheny, Greene, and Washington Counties, Pennsylvania With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status a/	State Status b	Global Rank c/	State Rank d/	Allegheny County	Greene County	Washington County
Small-whorled pogonia	*Isotria medeoloides*	LT	PE	G2	S1		X	
Small wood sunflower	*Helianthus microcephalus*		N	G5	S4	X	X	X
Smooth rose	*Rosa blanda*		N	G5	SU			
Snow trillium	*Trillium nivale*		PR	G4	S3	X	X	X
Soft fox sedge	*Carex conjuncta*			G4G5	S4		X	
Sourwood	*Oxydendrum arboreum*		TU	G5	S3S4	X	X	
Southern small yellow lady's-slipper	*Cypripdeium parviflorum* var. *parviflorum*			G5T3T5	S1S2	X		
Spotted beebalm	*Monarda punctate*		PE	G5	SH	X		
Spring blue-eyed Mary	*Collinsia verna*		PR	G5	S4	X	X	X
Spring coral-root	*Corallorhiza wisteriana*		TU	G5	S1	X		
St. Andrew's cross	*Hypericum stragulum*		N	G4	S2		X	
Stalked bulrush	*Scirpus pedicellatus*		PT	G4	S1			X
Stiff cowbane	*Oxypolis rigidior*		TU	G5	S2	X		
Sunflower	*Helianthus hirsutus*		T	G5	S2	X		
Swamp lousewort	*Pedicularis lanceolata*		N	G5	S1S2	X		
Tall larkspur	*Delphinium exaltatum*		PE	G3	S1	X		X
Tall tick-trefoil	*Desomodium glabellum*		TU	G5	S1	X		
Tennessee pondweed	*Potamogeton tennesseensis*		PE	G2	S1	X		
Three-seeded mercury	*Acalypha deamii*		N	G4?	SX	X		
Torrey's rush	*Juncus torreyi*		PT	G5	S3	X		X
Trillium sp.	*Trillium erectum* x *flexipes*			GNA	S2	X		X
Tufted hairgrass	*Deschampsia cespitosa*		N	G5	S3	X		
Turion duckweed	*Lemna turionifera*		TU	G5	S4	X		X
Twoleaf watermilfoil	*Myriophyllum heterophyllum*		PE	G5	S4		X	
Vase-vine leather-flower	*Clematis viorna*		PE	G5	S1	X		X
Virginia bunchflower	*Veratrum virginicum*		N	G5	S1	X		
Virginia groundcherry	*Physalis virginiana*		TU	G5	S1S2	X		
Virginia rose	*Rosa virginiana*		TU	G5	S1	X		
White blue-eyed grass	*Sisyrinchium albidum*		TU	G5?	SH	X		
Whiteflower leafcup	*Polymnia canadensis*		N	G5	SNR		X	

Table 3.4-3

Plant Species of Special Concern in Allegheny, Greene, and Washington Counties, Pennsylvania With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status a/	State Status b	Global Rank c/	State Rank d/	Allegheny County	Greene County	Washington County
White heath aster	*Symphyotrichum ericoides*		TU	G5	S3	X		
White trout-lily	*Erythronium albidum*		N	G5	S3	X	X	X
Winged-loosestrife	*Lythrum alatum*		TU	G5	S1	X		
Wild hyacinth	*Camassia sciloides*		PT	G4G5	S1	X		X
Wild oat	*Chasmanthium latifolium*		TU	G5	S1		X	
Wild senna	*Senna marilandica*		TU	G5	S3	X	X	X
Yellow water buttercup	*Ranunculus flabellaris*		N	G5	S2	X		

a/ LT = Federally Listed as Threatened

b/ N = No current legal status exists, but is under review for future listing; PX = Pennsylvania Extirpated, PE = Pennsylvania Endangered; PR = Pennsylvania Rare; PT = Pennsylvania Threatened; PV = Pennsylvania Vulnerable; TU = Tentatively Undetermined

c/ G#G# = Range Rank (indicates range of uncertainty about the exact status of a taxon or ecosystem type); G#G#T# = Infraspecific Taxon (trinomial) (status of infraspecific taxa [subspecies or varieties], following the same rules for global conservation rank); G#Q = Questionable Taxonomy (taxonomic distinctiveness of this entity at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or the inclusion of this taxon in another taxon, with the resulting taxon having a lower conservation priority); GNA = Not Applicable to global ranking; GNR = Not Ranked (not ranked at global level, applies to natural communities that have been designated at the state level, but not yet reviewed globally); G2 = Imperiled (at high risk of extinction globally due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors); G3 = Vulnerable (at moderate risk of extinction due to a restricted range, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors); G4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors); G5 = Secure (common, widespread, and abundant)

d/ S#S# = Range Rank (indicates any range of uncertainty about the status of the species or ecosystem); SH = Possibly Extinct (Historical) (historically in the nation or state, and there is some possibility that it may be rediscovered; presence may not have been verified in the past 20–40 years; could become Possibly Extinct without such a 20–40 year delay if the only known occurrences in the nation or state were destroyed, or if it had been extensively and unsuccessfully looked for; reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences); SNR – Not ranked at state level; SU = Unknown (currently unrankable due to lack of information or due to substantially conflicting information about status or trends); SX = Presumed Extinct (believed to be extirpated from the nation or state; not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered); S1 = Critically Imperiled (extreme rarity [often 5 or fewer populations] in the nation or state, or due to some factor(s) such as very steep declines, making it vulnerable to extirpation in the state); S2 = Imperiled (rarity due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors making it very vulnerable to extirpation from the nation or state); S3 = Vulnerable (restricted range in the nation or state, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors making it vulnerable to extirpation); S4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors)

(a) Small whorled pogonia

The small whorled pogonia is a federally threatened species (59 FR 50852-50857). It was listed as federally endangered in 1982, but was reclassified to threatened in 1994. No published critical habitat exists for the small whorled pogonia. This small plant is a member of the orchid family that is characterized by a single gray-green stem (10 to 14 inches tall) and the whorl of five to six leaves at the top of the stem (USFWS 2008b). The leaves are gray-green, oblong, and can reach 1 to 3.5 inches in length. A single or a pair of green-yellow flowers appears in May or June and populations are typically small (1–20 stems). In Greene County, Pennsylvania its occurrence is documented as historic (USFWS 2008c). Primary threats to the orchid are habitat loss and degradation and collection for commercial or personal use (USFWS 2008b).

The small whorled pogonia is found in mature, hardwood stands comprising beech (*Fagus* spp.), birch (*Betula* spp.), maple (*Acer* spp.), oak, and hickory (*Carya* spp.) that have an open understory (USFWS 2008b). The small whorled pogonia prefers acid soils under a thick layer of dead leaves, often on slopes adjacent to small streams.

Pennsylvania maintains a list of state-listed endangered, threatened, and rare species. Pennsylvania uses the designations "PE" (Pennsylvania Endangered), "PT" (Pennsylvania Threatened), "PR" (Pennsylvania Rare), "PX" (Pennsylvania Extirpated), "PV" (Pennsylvania Vulnerable), "TU" (Tentatively Undetermined), and "N" (no current legal status exists, but is under review) for native plant taxa. Other species are ranked in Pennsylvania using assigned letters and numbers that indicate the level of concern related to the threat of extinction for a species. The rank of each species of concern is determined in terms of its total population size, number of populations, extent of the species habitat, and extent of its geographic range. Other factors are considered when determining rarity such as increasing or decreasing population trends and threats to survival. The conservation status of a species of concern is considered on a global (G) and state (S) basis. The level of concern is designated with a 1–critically imperiled, 2–imperiled, 3–vulnerable to extirpation or extinction, 4–apparently secure, or 5–demonstrably widespread, abundant, and secure. Extinct or state extirpated species are assigned an "X" or an "H" if they are possibly extinct, but not definitively extirpated.

A review of the PANHP database was conducted to identify Pennsylvania's listed, special concern, and rare plant species that have the potential to occur in Allegheny, Greene, and Washington Counties (Table 3.4-3). Ongoing consultation with the USFWS and PADCNR and field survey results will determine which of these are most likely to occur in the Project area, based on known occurrences, ranges, and presence of suitable habitat to support these species. Agency consultation also will determine if site-specific surveys for any of these species are required for the Project. If site-specific surveys are required, they will be performed by qualified botanists within the appropriate survey window.

West Virginia does not have state legislation for designation of listed endangered, threatened, or rare species, but does maintain a natural heritage database of rare species and sensitive habitats. Ongoing consultation with WVDNR and field survey results will be used to determine if any special concern or rare plant species are associated with the Webster Interconnect site and if any species-specific surveys are required.

An effects determination and mitigation measures (if necessary) for listed, special concern, or rare plant species identified for the Project area will be determined upon completion of the agency consultation

process and field surveys. Results of field surveys, effects determination, and mitigation measures (if necessary) will be included in Resource Report 3 included with Equitrans' application to FERC.

3.4.3 Federally Protected Wildlife Species

Project field surveys and consultation with USFWS (Pennsylvania Field Office), PGC, PFBC, PADCNR, and WVDNR is ongoing. Site-specific Project information contained in this section regarding federally protected wildlife species will be updated as field surveys are completed, and the agency consultation process progresses and agency correspondence regarding protected wildlife species information is received.

Based on initial review of spatial data provided by state natural heritage programs six bird and mammals species could potentially occur in the Project area, including two federally listed and two delisted wildlife species (Table 3.4-4). One federal candidate species for listing, a snake, is associated with the Project area (Table 3.4-5).

Table 3.4-4

Bird and Mammal Wildlife Species of Special Concern in Allegheny, Greene, and Washington Counties, Pennsylvania; and Wetzel County, Wetzel County, West Virginia With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status a/	State Status b/	Global Rank c/	State Rank d/	Allegheny County	Greene County	Washington County	Wetzel County
Appalachian Bewick's wren	*Thryomanes bewickii altus*	MBTA		G5T2Q	SH				
Bachman's sparrow	*Peucaea aestivalis*	MBTA		G3	SX		X	X	
Bald eagle e/, f/	*Haliaeetus leucocephalus*	MBTA, BGEPA, BCC (b)	DL	G5	S3B	X	X	X	X
Barn owl	*Tyto alba*	MBTA		G5	S2S3B, S2S3			X	
Black-billed cuckoo e/, g/	*Coccyzus erythropthalmus*	MBTA				X	X	X	X
Black-capped chickadee e/, f/	*Poecile atricapillus*	MBTA, BCC (SAP)				X	X	X	X
Blue-winged warbler e/, g/	*Vermivora pinus*	MBTA, BCC				X	X	X	X
Canada warbler e/, g/	*Wilsonia canadensis*	MBTA, BCC				X		X	
Cerulean warbler e/, g/	*Dendroica cerulea*	MBTA, BCC				X	X	X	X
Fox sparrow e/, h/	*Passerella iliaca*	MBTA, BCC					X		X
Great blue heron	*Ardea herodias*	MBTA		G5	S3S4B, S4N	X	X	X	
Golden-winged warbler e/, g/	*Vermivora chrysoptera*	MBTA, BCC				X	X	X	
Henslow's sparrow e/, g/	*Ammodramus henslowii*	MBTA, BCC				X	X	X	X
Indiana bat e/	*Myotis sodalis*	LE	PE	G2	SUB, S1N	X	X	X	X
Kentucky warbler e/, g/	*Oporornis formosus*	MBTA, BCC				X	X	X	X
Least bittern e/, g/	*Ixobrychus exilis*	MBTA, BCC				X	X	X	X

Table 3.4-4

Bird and Mammal Wildlife Species of Special Concern in Allegheny, Greene, and Washington Counties, Pennsylvania; and Wetzel County, Wetzel County, West Virginia With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status a/	State Status b/	Global Rank c/	State Rank d/	Allegheny County	Greene County	Washington County	Wetzel County
Least shrew	*Cryptotis parva*		PE	G5	S1		X		
Least weasel	*Mustela nivalis*			G5	S3	X	X		
Little brown myotis	*Myotis lucifugus*			G5	S1		X	X	
Louisiana waterthrush e/, g/	*Parkesia motacilla*	MBTA, BCC				X	X	X	X
Migrant loggerhead shrike	*Lanius ludovicianus migrans*	MBTA	PE	G4T3Q	S1B	X	X		
Northern harrier	*Circus cyaneus*	MBTA	PT	G5	S2B, S4N	X			
Northern long-eared bat	*Myotis septentrionalis*	LT		G4	S1	X	X	X	X
Northern saw-whet owl e/, f/	*Aegolius acadicus*	MBTA, BCC (SABP)				X	X	X	X
Osprey	*Pandion haliaetus*	MBTA	PT	G5	S3B	X			
Peregrine falcon	*Falco peregrinus*	MBTA	PE	G4	S1B, S1N	X			
Pied-billed grebe e/, g/	*Podilymbus podiceps*	MBTA		G5	S3B, S4N	X	X	X	X
Prairie warbler e/, g/	*Dendroica discolor*	MBTA, BCC				X	X	X	X
Red-headed woodpecker e/, g	*Melanerpes erythrocephalus*	MBTA, BCC				X	X	X	X
Silver-haired bat	*Lasionycteris noctivagans*			G5	SUB	X	X	X	
Short-eared owl e/, h/	*Asio flammeus*	MBTA, BCC	PE	G5	S1B, S3N	X	X	X	X
Sora	*Porzana carolina*	MBTA		G5	S3B	X			
Upland sandpiper e/, g/	*Bartramia longicauda*	MBTA, BCC	PE	G5	S1B	X	X	X	X
Wood thrush e/, g/	*Hylocichla mustelina*	MBTA, BCC				X	X	X	

Table 3.4-4

Bird and Mammal Wildlife Species of Special Concern in Allegheny, Greene, and Washington Counties, Pennsylvania; and Wetzel County, Wetzel County, West Virginia With the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status a/	State Status b/	Global Rank c/	State Rank d/	Allegheny County	Greene County	Washington County	Wetzel County
Worm-eating warbler e/, g/	*Helmitheros vermivorum*	MBTA, BCC				X	X	X	X

a/ BCC = United States Fish and Wildlife (USFWS) Bird of Conservation Concern (BCC) for Bird Conservation Region (BCR) 28 (Appalachian Mountains); BCC (b) = United States Fish and Wildlife BCC for BCR 28 (Appalachian Mountains) breeding population; BCC (SABP) = United States Fish and Wildlife BCC for BCR 28 (Appalachian Mountains) southern Appalachian breeding population; BCC (SAP) = United States Fish and Wildlife BCC for BCR 28 (Appalachian Mountains) southern Appalachian breeding population; BGEPA = Species projected by Bald and Golden Eagle Protection Act; LE = Federally Listed as Endangered; LT = Federally Listed as Threatened; Species protected by Migratory Bird Treaty Act

b/ DL = Delisted; PE = Pennsylvania Endangered; PT = Pennsylvania Threatened

c/ G#G# = Range Rank (indicates range of uncertainty about the exact status of a taxon or ecosystem type); G#Q = Questionable Taxonomy (taxonomic distinctiveness of this entity at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or the inclusion of this taxon in another taxon, with the resulting taxon having a lower conservation priority); G#T# = Infraspecific Taxon (trinomial) (status of infraspecific taxa [subspecies or varieties], following the same rules for global conservation rank); G2 = Imperiled (at high risk of extinction globally due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors); G3 = Vulnerable (at moderate risk of extinction due to a restricted range, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors); G4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors); G5 = Secure (common, widespread, and abundant)

d/ S#S# = Range Rank (indicates any range of uncertainty about the status of the species or ecosystem); S#B or SUB = Applicable to breeding population; S#N = Applicable to non-breeding population; SH = Possibly Extinct (Historical) (historically in the nation or state, and there is some possibility that it may be rediscovered; presence may not have been verified in the past 20–40 years; could become Possibly Extinct without such a 20–40 year delay if the only known occurrences in the nation or state were destroyed, or if it had been extensively and unsuccessfully looked for; reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences); SX = Presumed Extinct (believed to be extirpated from the nation or state; not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered); S1 = Critically Imperiled (extreme rarity [often 5 or fewer populations] in the nation or state, or due to some factor(s) such as very steep declines, making it vulnerable to extirpation in the state); S2 = Imperiled (rarity due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors making it very vulnerable to extirpation from the nation or state); S3 = Vulnerable (restricted range in the nation or state, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors making it vulnerable to extirpation); S4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors)

e/ Species identified in Project-specific effects analysis query submitted to USFWS's Information for Planning and Conservation (IPaC) database (https://ecos.fws.gov/ipac/gettingStarted/map, Accessed 27 May 2015)

f/ Year-round resident of Project area based on Project-specific effects analysis query submitted to USFWS's IPaC database (https://ecos.fws.gov/ipac/gettingStarted/map, Accessed 27 May 2015)

g/ Breeding season resident of Project area based on Project-specific effects analysis query submitted to USFWS's IPaC database (https://ecos.fws.gov/ipac/gettingStarted/map, Accessed 27 May 2015)

h/ Winter season resident of Project area based on Project-specific effects analysis query submitted to USFWS's IPaC database (https://ecos.fws.gov/ipac/gettingStarted/map, Accessed 27 May 2015)

Table 3.4-5

Amphibian and Reptile Wildlife Species of Special Concern in Allegheny, Greene, and Washington Counties, Pennsylvania, with the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status a/	State Status b/	Global Rank c/	State Rank d/	Allegheny County	Greene County	Washington County
Eastern hellbender	*Cryptobranchus alleghaniensis alleghaniensis*			G3G4T3T4	S2S3		X	X
Eastern hognose snake	*Heterodon platirhinos*			G5	S3S4	X		
Eastern massasauga	*Sistrurus catenatus catenatus*	C	PE	G3G4T3Q	S1	X		
Kirtland's snake	*Clonophis kirtlandii*		PE	G2	SH	X		
Mountain chorus frog	*Pseudacris brachyphona*			G5	S2		X	X
Northern cricket frog	*Acris crepitans*		PE	G5	S1	X		
Queen snake	*Regina septemvittata*			G5	S3S4	X		X
Rough green snake	*Opheodrys aestivus*		PE	G5	S1S2		X	

a/ C = Federally Candidate Species for Listing

b/ PE = Pennsylvania Endangered

c/ G#G# = Range Rank (indicates range of uncertainty about the exact status of a taxon or ecosystem type); G#Q = Questionable Taxonomy (taxonomic distinctiveness of this entity at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or the inclusion of this taxon in another taxon, with the resulting taxon having a lower conservation priority); T#T# = Infraspecific Taxon (trinomial) (status of infraspecific taxa [subspecies or varieties], following the same rules for global conservation rank); G2 = Imperiled (at high risk of extinction globally due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors); G3 = Vulnerable (at moderate risk of extinction due to a restricted range, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors); G4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors); G5 = Secure (common, widespread, and abundant)

d/ S#S# = Range Rank (indicates any range of uncertainty about the status of the species or ecosystem); SH = Possibly Extinct (Historical) (historically in the nation or state, and there is some possibility that it may be rediscovered; presence may not have been verified in the past 20–40 years; could become Possibly Extinct without such a 20–40 year delay if the only known occurrences in the nation or state were destroyed, or if it had been extensively and unsuccessfully looked for; reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences); S1 = Critically Imperiled (extreme rarity [often 5 or fewer populations] in the nation or state, or due to some factor(s) such as very steep declines, making it vulnerable to extirpation in the state); S2 = Imperiled (rarity due to very restricted range, very few populations [often 20 or fewer], steep declines, or other factors making it very vulnerable to extirpation from the nation or state); S3 = Vulnerable (restricted range in the nation or state, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors making it vulnerable to extirpation); S4 = Apparently Secure (uncommon but not rare, some cause for long-term concern due to declines or other factors)

The federally listed, candidate, and delisted species associated with the Project area include:

- Indiana bat (*Myotis sodalis*) (Endangered)
- northern long-eared bat (*Myotis septentrionalis*) (Threatened)

(a) Indiana bat

The USFWS listed the Indiana bat as endangered on March 11, 1967 (USFWS no date c). Their range occurs over most of the eastern half of the United States (USFWS 2006), and this species has the potential to occur in all areas of the Project. The 2013 range-wide estimate of the population was 534,239 individuals (USFWS 2013). The Indiana bat is a small, social bat, often occurring in large numbers during hibernation (USFWS 2006). In flight its wingspan is 9 to 11 inches, and it has dark-brown to black fur. In winter, the Indiana bat hibernates in caves, or occasionally in abandoned mines, where they require cool, humid conditions with stable temperatures below 50°F, but above freezing. After hibernation, these bats migrate to summer habitats that are located in woodlands where they roost under loose tree bark, or in dead or dying trees. Males roost alone in the summer, whereas females roost in groups of 100 or more bats (maternity roosts). This species forages along edges of bottomland or upland forests, old fields and pastures, and along riparian edges of rivers or lakes, eating a variety of flying insects (PGC and PFBC 2008). They typically eat about half of their body weight each night. Primary threats to this species include human disturbance (especially during hibernation), cave commercialization (cave tours), improper gating of caves (blocking the entrance or resulting in changing the internal temperature or air flow within the cave), loss or degradation of summer habitat, pesticide use, and environmental contaminants. In addition to these threats, white-nose syndrome (WNS) can have devastating mortality effects on hibernating bat populations. WNS was first documented in New York in the winter of 2006–2007, and likely was present in bat populations in Pennsylvania in 2008 (PGC 2013). WNS is a white fungus (*Geomyces destructans*) that can infect bat populations and may completely or significantly reduce bat populations residing in caves during their hibernation period. Affected bats will have the white fungus on their muzzles and/or wing membranes. This fungus thrives in the cold, damp conditions where bats hibernate, but typically does not grow on bats during the summer months when they are active at typical forest temperatures. This fungus has been confirmed to be the causative agent of the disease, although the specific mechanism in how it causes mortality is not fully understood.

Field surveys and agency correspondence will determine if potentially suitable summer and winter habitat for the Indiana bat exists within the Project area. An effects determination and mitigation measures (if necessary) will be determined upon completion of field surveys and the agency consultation process. Results of field surveys, effects determination, and mitigation measures (if necessary) will be included in Resource Report 3 included with Equitrans' application to the FERC.

If field surveys are conducted for Indiana bats for the Project, the USFWS Draft Protocol for Assessing Abandoned Mines/Caves for Bat Use (Updated June 2011), USFWS Range-wide Indiana Bat Summer Survey Guidelines (Updated January 2014), and USFWS Northern Long-eared Bat Interim Conference and Planning Guidance (Updated January 2014) will be followed. A draft study plan detailing survey type, effort, and locations was submitted to the USFWS, PGC, PFBC, PADCNR, and WVDNR for approval in July 2015. Results of agency review of the study plan and final approved plan will be included with Resource Report 3 included with Equitrans' application to FERC.

(b) Northern long-eared bat

The Project is within the documented range of northern long-eared bats (76 FR 38095-38106). Northern long-eared bats inhabit forested and riparian habitats for foraging and roosting. The USFWS recently listed the northern long-eared bat (also known as northern myotis and eastern long-eared bat) as threatened on May 4, 2015 (80 FR 63). The USFWS initiated a 90-day review on July 29, 2011 to determine if federal listing of the northern long-eared bat was warranted, and on October 2, 2013, the USFWS released their 12-month finding on a petition to list the northern long-eared bat and to designate critical habitat for this species (78 FR 191). This finding indicated that designation of critical habitat could not be determined, and to date no critical habitat has been designated for this species by USFWS. On January 6, 2014, the USFWS published their Interim Conference and Planning Guidance that addresses immediate information needs for Section 7 consultations and conservation planning for this species (USFWS 2014b). At the time of listing, the USFWS also established an interim rule amending 50 CFR 17.40 under the authority of section 4(d) (Interim 4[d] rule) of the ESA that provides measures that are necessary and advisable to provide for the conservation of this species. The comment period for this interim rule ended on July 1, 2015.

Preferred summer roosts of the northern long-eared bat are generally associated with old-growth forests composed of trees 100 years old or older, and this species is dependent on intact interior forest habitats that have a low edge-to-interior ratio (76 FR 38095-38106). Relevant late-successional forest features include a high percentage of old trees, uneven forest structure, single and multiple tree-fall gaps, standing snags, and woody debris. This species appears to favor small cracks or crevices in cave ceilings for hibernation. Northern long-eared bats are opportunistic insectivores, obtaining prey both in flight and by gleaning from surfaces. Prey includes small insects, such as moths, flies, leafhoppers, and beetles. Forested hillsides and ridges are their preferred foraging habitat, with the presence of mature forest stands thought to play an important role in their foraging behavior. Foraging occurs at dusk over small ponds and forest clearings under the forest canopy or along streams (USFWS 2011).

Field surveys and agency correspondence will determine if potentially suitable summer and winter habitat for northern long-eared bat exists within the Project area. An effects determination and mitigation measures (if necessary) will be determined upon completion of field surveys and the agency consultation process. Results of field surveys, effects determination, and mitigation measures (if necessary) will be included in Resource Report 3 included with Equitrans' application to the FERC.

If field surveys are conducted for the northern long-eared bat, the USFWS Draft Protocol for Assessing Abandoned Mines/Caves for Bat Use (Updated June 2011), USFWS Range-wide Indiana Bat Summer Survey Guidelines (Updated January 2014), and USFWS Northern Long-eared Bat Interim Conference and Planning Guidance (Updated January 2014) will be followed. A study plan detailing survey type, effort, and locations was submitted to the USFWS, PGC, PFBC, PADCNR, and WVDNR, and WVDNR for approval in July 2015. Results of agency review of the study plans and final approved plan will be included with Resource Report 3 included with Equitrans' application to the FERC.

3.4.4 State Protected Wildlife Species

Project field surveys and consultation with USFWS (Pennsylvania Field Office), PGC, PFBC, PADCNR, and WVDNR are ongoing. Site-specific Project information contained in this section regarding state protected wildlife species will be updated as field surveys are completed, and the agency consultation process progresses and agency correspondence regarding protected wildlife species information is received.

Based on initial review of spatial data provided by state natural heritage programs, 39 state listed plant species, 19 state listed wildlife species, and one state delisted wildlife species could potentially occur in the Project area (Table 3.4-1, Table 3.4-4, and Table 3.4-5). The wildlife species include:

- clubshell (Pennsylvania Endangered)
- pistolgrip mussel (*Quadrula verrucosa*) (Pennsylvania Endangered)
- round hickorynut (*Obovaria subrotunda*) (Pennsylvania Endangered)
- salamander mussel (*Simpsonaias ambigua*) (Pennsylvania Endangered)
- sheepnose mussel (Pennsylvania Threatened)
- snuffbox (Pennsylvania Endangered)
- Kirtland's snake (*Clonophis kirtlandii*) (Pennsylvania Endangered)
- northern cricket frog (*Acris crepitans*) (Pennsylvania Endangered)
- rough green snake (Opheodrys aestivus) (Pennsylvania Endangered)

Of these species, clubshell, sheepnose mussel, and snuffbox also are federally listed and are described in Section 3.4.1 (Protected Aquatic and Marine Species); eastern massasauga, peregrine falcon, and Indiana bat also are federally listed and are described in Section 3.4.3 (Federally Protected Wildlife Species). Bald eagle is protected by the Eagle Act and also is described in Section 3.4.3 (Federally Protected Wildlife Species).

(a) Pistolgrip mussel

The pistolgrip is freshwater mussel characterized by a dark brown to black shell with prominent bumps covering the shell. The species is elongated and has been recorded as reaching up to 8 inches in length. The species is sexually dimorphic, with females being rounded and compressed posteriorly and males being more compressed. Pistolgrips inhabit most types of substrate, but are seldom found in shifting, sandy substrates of large and medium-sized rivers within pool and riffle habitat. Potential host fish species for pistolgrip include yellow bullhead (*Ameiurus natalis*) and brown bullhead (*Ameiurus nebulosa*), and flathead catfish (*Pylodictis olivaris*) (NatureServe Explorer 2015g). This species is critically imperiled in Pennsylvania and imperiled in West Virginia.

(b) Round hickorynut

The round hickorynut is a relatively small freshwater mussel with an almost perfectly round shell and a smooth, brown, rayless periostracum (NatureServe Explorer 2015h). The periostracum is generally dark brown or olive-brown and without rays except in some very young specimens. Females of the species tend to be considerably smaller than males. Potential host fish species for this mussel are unknown. This species occurs in large rivers, with low gradients, and medium rivers with moderate gradients in shallow, riffle habitat.

(c) Salamander mussel

The salamander mussel is a freshwater mussel that is predominately brown or yellowish brown, but can be blackish posteriorly in some specimens. Rarely there are faint traces of narrow rays over the center of the shell, but in most specimens, including juveniles, rays are absent. Potential hosts include mudpuppy (*Necturus maculosus*). This species inhabits shallow areas of large rivers and creeks, and medium rivers with moderate gradients (NatureServe Explorer 2015i). Preferred habitats of the salamander mussel include sand or silt under large, flat stones in areas of swift current.

(d) Kirtland's snake

Kirtland's snake grows to 2 feet in length and has keeled upper scales that are gray-reddish brown, with rows of small, diffuse and dark blotches along the midline (NatureServe Explorer 2007a). This species occurs in damp habitats, such as marsh edges, wet fields and pastures, and along creeks, canals, ponds, and ditches. Kirtland's snake emerges from hibernation in March or April, with mating occurring in May. Young are born live in July–late September. They feed on earthworms and slugs, and use logs, rocks, and leaf piles as daytime retreats in the summer. Crayfish burrows may be used as daytime retreats or for winter hibernation from October–late March.

(e) Northern cricket frog

The northern cricket frog is a small gray, brown, or green frog with a green or brown stripe down the middle of its back, with distinctive triangles behind the eyes and crossbars on the hind legs (PFBC 2012). This frog inhabits vegetated wetlands, lakes, bogs, ponds, vernal pools, and large open water marsh habitat with vegetated shores and edges (PGC and PFBC 2008). The northern cricket frog emerges from hibernation in March–April, with breeding occurring from May through August in Pennsylvania (PFBC 2012). It feeds on terrestrial insects, preferring ants, beetles, flies, grasshoppers, springtails, and spiders. It is active during both the day and night. This species has experienced drastic declines throughout its range in Pennsylvania, and is poorly understood. It is believed that it no longer occurs within 92 percent of its historic range. PFBC listed this species as endangered in 2010, with the greatest threats identified as wetland encroachment from development and associated water quality issues associated with urban development.

(f) Rough green snake

The rough green snake has keeled upper scales and has a long tapered tail, growing up to 46 inches in length (NatureServe Explorer 2007b). It inhabits riparian thickets and lake shores where trees or woody shrubs that are approximately 1–3 meters in height dominate the vegetation (PGC and PFBC 2008). Mating occurs in the spring, with eggs laid in June and July in rotten logs or stumps, natural tree cavities located up off the ground, or in cavities under moss or flat rocks. Eggs hatch in late August and September. Primary food includes caterpillars, grasshoppers, crickets, and spiders. It is known historically to have occurred in Greene County, Pennsylvania, and the current population in Pennsylvania is only known to occur in Chester County.

3.4.5 Endangered, Threatened, and Special Concern Species Impacts and Mitigation

Equitrans is actively engaged with state and federal natural resource agencies to determine the likelihood of threatened and endangered species that may be present in the Project vicinity and the potential need for species-specific field surveys for the Project. The consultation process with the USFWS Pennsylvania Field Office, PGC, PFBC, PADCNR, and WVDNR is ongoing, and specific impacts and mitigation measures to special status federal and state species have yet to be identified for the Project. As consultation progresses, this section will be updated to include specific requirements and recommendations resulting from the agency consultation process.

Project field surveys are ongoing, and once these have been completed detailed reports containing the methods, results, and conclusions of field surveys for each species targeted during these surveys will be submitted to the agencies for review. Throughout the Project planning, permitting, and construction periods, Equitrans will continue coordination with the agencies to determine reasonable and prudent measures to

avoid, minimize, or mitigate anticipated impacts to threatened and endangered species within the Project area. The anticipated impacts resulting from construction and operation of the Project on state and federally protected species will be determined following completion of field surveys and agency consultation process.

3.5 REFERENCES

Audubon. No date a. Important Bird Areas in Pennsylvania. http://netapp.audubon.org/iba/IBAList/US-PA; accessed May 31, 2015.

Audubon. No date b. Important Bird Areas in West Virginia. http://netapp.audubon.org/IBA/IBAList/US-WV; accessed May 31, 2015.

Bailey, R.G. 1995. Description of the Ecoregions of the United States. 2d ed. rev. and expanded (1st ed. 1980). Misc. Publ. No. 1391 (rev.), Washington, DC: USDA Forest Service. 108 pp. with separate map at 1:7,500,000.

Bennett, A. F. 2003. Linkages in the Landscape: The Role of Corridors and Connectivity in Wildlife Conservation. IUCN, Gland, Switzerland and Cambridge, UK. Available online at: https://portals.iucn.org/library/efiles/edocs/FR-021.pdf; accessed June 9, 2015.

Fike, J. 1999. Terrestrial & Palustrine Plant Communities of Pennsylvania. Pennsylvania Natural Diversity Inventory. http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_001872.pdf; accessed June 8, 2015.

Green County Conservation District. 2013. Watersheds, Rivers, & Streams. Ten Mile Creek. http://www.co.greene.pa.us/secured/gc2/depts/ed/conserv/more-TenMileCk.htm; accessed June 5, 2015.

Jin, S., L. Yang, P. Danielson, C. Homer, J. Fry, and G. Xian. 2013. A comprehensive change detection method for updating the National Land Cover Database to circa 2011. *Remote Sensing of Environment.* 132: 159–175.

Lackey, R. T. 2005. Fisheries: History, Science, and Management. *Water Encyclopedia: Surface and Agricultural Water*. 3:121-129.

Marshall University. No Date. Amphibians and Reptiles in West Virginia. http://www.marshall.edu/herp/WVHERPS.HTM; accessed June 9, 2015.

NatureServe Explorer. 2007a. An Online Encyclopedia of Life. Kirtland's snake (*Clonophis kirtlandii*). http://www.naturalheritage.state.pa.us/factsheets/11537.pdf; accessed June 8, 2015.

NatureServe Explorer. 2007b. An Online Encyclopedia of Life. Rough Green Snake (*Opeodrys aestivus*). http://www.naturalheritage.state.pa.us/factsheets/11545.pdf; accessed June 8, 2015.

NatureServe Explorer. 2007c. An Online Encyclopedia of Life. Short-eared Owl (*Asio flammeus*). http://www.naturalheritage.state.pa.us/factsheets/11058.pdf; June 8, 2015.

NatureServe Explorer. 2007d. An Online Encyclopedia of Life. Upland sandpiper (*Bartramia longicauda*). http://www.naturalheritage.state.pa.us/factsheets/10986.pdf; accessed June 8, 2015.

NatureServe Explorer. 2015a. An Online Encyclopedia of Life. Clubshell (*Pleurobema clava*) . http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=F01D ; accessed May 28, 2015.

NatureServe Explorer. 2015b. An Online Encyclopedia of Life. *Cyprogenia stegaria* - (Rafinesque, 1820) Fanshell. http://explorer.natureserve.org/servlet/NatureServe?searchName=Cyprogenia+stegaria; accessed June 2, 2015.

NatureServe Explorer. 2015c. An Online Encyclopedia of Life. *Plethobasus cooperianus* - (I. Lea, 1834) Orangefoot Pimpleback . http://explorer.natureserve.org/servlet/NatureServe?searchName=Plethobasus+cooperianus; accessed June 2, 2015.

NatureServe Explorer. 2015d. An Online Encyclopedia of Life. *Lampsilis abrupta* - (Say, 1831) Pink Mucket. http://explorer.natureserve.org/servlet/NatureServe?searchName=Lampsilis+abrupta; accessed June 2, 2015.

NatureServe Explorer. 2015e. An Online Encyclopedia of Life. *Quadrula cylindrica cylindrica* - (Say, 1817) Rabbitsfoot. http://explorer.natureserve.org/servlet/NatureServe?searchName=Quadrula+cylindrica+cylindrica; accessed May 28, 2015.

NatureServe Explorer. 2015f. An Online Encyclopedia of Life. *Epioblasma triquetra* - (Rafinesque, 1820) Snuffbox. http://explorer.natureserve.org/servlet/NatureServe?searchName=Epioblasma+triquetra; accessed June 2, 2015.

NatureServe Explorer. 2015g. An Online Encyclopedia of Life. *Quadrula verrucosa* - (Rafinesque, 1820) Pistolgrip. http://explorer.natureserve.org/servlet/NatureServe?searchName=Tritogonia+verrucosa; accessed June 9, 2015.

NatureServe Explorer. 2015h. An Online Encyclopedia of Life. *Obovaria subrotunda* - (Rafinesque, 1820) Round Hickorynut. http://explorer.natureserve.org/servlet/NatureServe?searchName=Obovaria+subrotunda; accessed June 9, 2015.

NatureServe Explorer. 2015i. An Online Encyclopedia of Life. *Simpsonaias ambigua* - (Say, 1825) Salamander Mussel. http://explorer.natureserve.org/servlet/NatureServe?searchName=Simpsonaias+ambigua; accessed June 9, 2015.

NMFS (National Oceanic and Atmospheric Administration National Marine Fisheries Service). 2015. EFH Mapper. http://www.habitat.noaa.gov/protection/efh/efhmapper; accessed May 23, 2015.

Omernik, J., and G. Griffith. 2008. Ecoregions of Delaware, Maryland, Pennsylvania, Virginia, and West Virginia (EPA). http://www.eoearth.org/view/article/152020; accessed June 6, 2015.

PANHP (Pennsylvania Natural Heritage Program). No date a. Pennsylvania Endangered Bird Species. Peregrine Falcon (*Falco peregrinus*). http://www.naturalheritage.state.pa.us/factsheets/10952.pdf; accessed June 4, 2015.

PANHP. No date b. Migrant Loggerhead Shrike (*Lanius ludovicianus migrans*). http://www.naturalheritage.state.pa.us/factsheets/11138.pdf; accessed June 8, 2015.

Pennsylvania Angler and Boater. 2007. Pennsylvania Amphibians and Reptiles. The massasauaga rattlesnake. http://fishandboat.com/anglerboater/2007/06novdec/reg3rattle.pdf; accessed June 4, 2015.

Pennsylvania Department of Agriculture. No date. Pennsylvania Sports Fish Directory. http://extension.psu.edu/natural-resources/water/sports-fish-directory; accessed June 7, 2015.

Pennsylvania Department of Environmental Protection. 2015. State Water Plan Digital Water Atlas. http://www.pawaterplan.dep.state.pa.us/statewaterplan/DWA/DWAMain.aspx?regionId=4; accessed June 5, 2015

Pennsylvania Envirothon. No date. Forest Types of Pennsylvania. http://www.envirothonpa.org/documents/ForestTypes.pdf; accessed June 8, 2015.

PFBC (Pennsylvania Fish and Boat Commission). 2005. Pennsylvania Wild Trout Waters (Natural Reproduction) - May 2015. http://fishandboat.com/trout_repro.pdf; accessed June 7, 2015.

PFBC. 2012. Species Spotlight – Northern Cricket Frog. Pennsylvania Angler & Boater. September/October 2012. http://fishandboat.com/anglerboater/2012ab/vol81num5_sepoct/12cricket.pdf; accessed June 8, 2015.

PFBC. 2015a. County Guide. Interactive Maps: PA Lakes–Ww/Cw Fisheries–Biologist Reports–Best Waters–Fishing Special Regs–Water Trails–more. http://fishandboat.com/county.htm; accessed June 5, 2015.

PFBC. 2015b. Gallery of Pennsylvania Fishes. Chapter 2 – Pennsylvania Species by Watershed. http://fishandboat.com/pafish/fishhtms/chap2.htm; accessed June 7, 2015.

PGC (Pennsylvania Game Commission). 2014a. Northern Harrier Factsheet (pdf).

PGC. 2014b. Osprey (*Pandion haliaetus*). Factsheet. http://www.portal.state.pa.us/portal/server.pt/document/775667/osprey_pdf; accessed June 7, 2015.

PGC. 2014c. Least shrew Factsheet (pdf).

PGC. 2013. White-Nose Syndrome (WNS). http://www.portal.state.pa.us/portal/server.pt?open=514&objID=615025&mode=2; accessed June 4, 2015.

PGC and PFBC. 2008. Pennsylvania's Wildlife Action Plan. Version 1.0a, 2005, updated 2008. 783pp.

Preston, B. 2010. West Virginia Division of Natural Resources. Electronic mail to John Hartung of URS dated August 26, 2010.

Rymon, L. 1992. Osprey (*Pandion haliaetus*). In 2nd Pennsylvania Breeding Bird Atlas. D.W. Brauning, ed. http://www.carnegiemnh.org/powdermill/atlas/1pbba-book.html; accessed July 7, 2011.

Shingleton, M. 2013. Fish Hatcheries. e-WV: The West Virginia Encyclopedia. October 16, 2013. http://www.wvencyclopedia.org/articles/2182; accessed June 7, 2015.

United States Army Corps of Engineers, Pittsburgh District. 2012. Monongahela River Watershed. Initial Watershed Assessment. September 2011, Revised February 2012. http://www.lrp.usace.army.mil/Portals/72/docs/HotProjects/signed%20IWA_final_revised%20FEB12%20public%20comments%20incorporated.pdf; accessed June 5, 2015.

United States Geological Survey. 2014. Water Resources of the United States – Boundary Descriptions and Names of Regions, Subregions, Accounting Units and Cataloging Units. http://water.usgs.gov/GIS/huc_name.html; accessed June 9, 2015.

USDA (United States Department of Agriculture). 2014. 2012 Census of Agriculture: West Virginia State and County Data, Volume 1, AC-12-A-48. Aquaculture Sales: 2012 and 2007 Table 32. http://agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_1_State_Level/West_Virginia/st54_1_032_033.pdf; accessed June 7, 2015.

USDA National Agricultural Statistics Service, Pennsylvania Field Office. 2012. Pennsylvania Agricultural Statistics 2011–2012. Trout and Aquaculture Census, 2011. http://www.nass.usda.gov/Statistics_by_State/Pennsylvania/Publications/Annual_Statistical_Bulletin/2011_2012/trout_2011.pdf; accessed June 7, 2015.

USDA National Agricultural Statistics Service, West Virginia Field Office. 2015. West Virginia Agricultural Statistics. West Virginia Commercial Trout Production. http://nass.usda.gov/Statistics_by_State/West_Virginia/Publications/Current_News_Release/Trout0315.pdf; accessed June 7, 2015.

USDA Natural Resources Conservation Service. 2015. Watershed Boundary Dataset. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/dma/?cid=nrcs143_021630; accessed June 9, 2015.

USEPA (United States Environmental Protection Agency). 2003. Level III and IV Ecoregions of EPA Region 3. ftp://ftp.epa.gov/wed/ecoregions/reg3/reg3_eco.pdf; accessed May 27, 2015.

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

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

USEPA. 2015. Surf Your Watershed. Little Muskingum-Middle Island Watershed – 05030201. http://cfpub.epa.gov/surf/huc.cfm?huc_code=05030201; accessed June 9, 2015.

USFWS (United States Fish and Wildlife Service). No date a. Refuge List by State – Pennsylvania. http://www.fws.gov/refuges/profiles/ByState.cfm?state=PA; accessed June 2, 2015.

USFWS. No date b. Refuge List by State – West Virginia. http://www.fws.gov/refuges/profiles/ByState.cfm?state=WV; accessed June 2, 2015.

USFWS. No date c. Environmental Conservation Online System. Indiana bat (*Myotis sodalis*). http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A000; accessed June 4, 2015.

USFWS. No date d. Environmental Conservation Online System. Eastern Massasauga (*Sistrurus catenatus*). http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C03P; accessed June 4, 2015.

USFWS. 2006. Indiana Bat (*Myotis sodalist*) Factsheet. http://www.fws.gov/midwest/endangered/mammals/inba/pdf/inbafctsht.pdf; accessed June 4, 2015.

USFWS. 2007a. Bald Eagle. Fact Sheet: Natural History, Ecology, and History of Recovery. http://www.fws.gov/midwest/eagle/recovery/biologue.html; accessed June 04, 2015.

USFWS. 2007b. Ecological Services. Bald Eagle Management Guidelines and Conservation Measures. Bald Eagle Natural History and Sensitivity to Human Activity Information. http://www.fws.gov/southeast/es/baldeagle/baea_nhstry_snstvty.html; accessed June 9, 2015.

USFWS. 2008a. Birds of Conservation Concern 2008. United States Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. December. http://www.fws.gov/migratorybirds/pdf/grants/BirdsofConservationConcern2008.pdf; accessed May 27, 2015.

USFWS. 2008b. Small Whorled Pogonia (*Isotria medeoloides*) Factsheet. http://www.fws.gov/midwest/endangered/plants/smallwhorledpogoniafs.html; accessed June 4, 2015.

USFWS. 2008c. Small Whorled Pogonia (*Isotria medeoloides*) 5-Year Review: Summary and Evaluation. http://www.fws.gov/northeast/EcologicalServices/pdf/endangered/Small%20Whorled%20Pogonia%205YR.pdf; accessed June 4, 2015.

USFWS. 2011. 76 FR 38095 - Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To List the Eastern Small-Footed Bat and the Northern Long-Eared Bat as Threatened or Endangered. June 29, 2011. http://www.gpo.gov/fdsys/granule/FR-2011-06-29/2011-16344/content-detail.html; accessed June 9, 2015.

USFWS. 2013. 2013 Rangewide population estimate for the Indiana bat (*Myotis sodalis*) by USFWS region. United States Department of Interior, Fish and Wildlife Services, Ecological Services Field Office, Bloomington, Indiana.

USFWS. 2014a. Pennsylvania Field Office, Pennsylvania Bald Eagle Nest Locations and Buffer Zones. http://www.fws.gov/northeast/pafo/bald_eagle_map.html; accessed May 31, 2015.

USFWS. 2014b. Northern Long-eared Bat Interim Conference and Planning Guidance. USFWS Regions 2,3, 4, 5, & 6. January 6, 2014. http://www.fws.gov/midwest/endangered/mammals/nlba/pdf/NLEBinterimGuidance6Jan2014.pdf; accessed June 9, 2015.

USFWS. 2015. Endangered Species. Sheepnose (a freshwater mussel) *Plethobasus cyphyus*. http://www.fws.gov/Midwest/endangered/clams/sheepnose/SheepnoseFactSheetMarch2012.html; accessed June 9, 2015.

USFWS and United States Census Bureau. 2014a. U.S. Fish & Wildlife Service 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation – Pennsylvania. https://www.census.gov/prod/2013pubs/fhw11-pa.pdf; accessed June 7, 2015.

USFWS and United States Census Bureau. 2014b. U.S. Fish & Wildlife Service 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation – West Virginia. https://www.census.gov/prod/2013pubs/fhw11-wv.pdf; accessed June 7, 2015.

West Virginia Department of Agriculture. 2002. Foods & Things...Producer Guide & Directory. Aquaculture. http://www.wvagriculture.org/Brochures/Foods_and_Things/Aquaculture.htm; accessed June 7, 2015.

West Virginia Department of Agriculture. 2009. West Virginia Agricultural Statistics. 2009 Annual Bulletin No. 40. http://www.nass.usda.gov/Statistics_by_State/West_Virginia/Publications/Annual_Statistical_Bulletin/Bulletin2009-All.pdf; accessed June 7, 2015.

West Virginia Department of Environmental Protection. 2015. Fishes of West Virginia. http://www.dep.wv.gov/WWE/getinvolved/sos/Pages/Fishes.aspx; accessed June 7, 2015.

wildtroutstreams.com. 2014. West Virginia. http://www.wildtroutstreams.com/streams/wv-wts; accessed June 7, 2015.

Woods, A. J., J. M. Omernik, and D. D. Brown. 1999. Level III and IV ecoregions of Delaware, Maryland, Pennsylvania, Virginia, and West Virginia. United States Environmental Protection Agency, National Health and Environmental Effects Research Laboratory, Corvallis, Oregon.

WVDNR (West Virginia Department of Natural Resources). No date. Hunting, Trapping and Fishing Map–Fishing. http://www.mapwv.gov/huntfish/map.html#section=fishing; accessed June 5, 2015.

WVDNR. 2003a. West Virginia Warmwater Hatchery Program http://www.wvdnr.gov/fishing/warmwater_hatchery.shtm; accessed June 7, 2015.

WVDNR. 2003b. District 1 Wildlife Management Areas. http://www.wvdnr.gov/Hunting/D1WMAareas.shtm; accessed June 2, 2015.

WVDNR. 2005. It's About Habitat. West Virginia Wildlife Conservation Action Plan. http://www.wvdnr.gov/Wildlife/PDFFiles/wvwcap.pdf; accessed June 8, 2015.

Mountain Valley Pipeline Project

Docket No. PF15-22

Resource Report 3

Appendix 3-A
Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion

Appendix 3-A

Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion

Common Name	Scientific Name
Alewife	*Alosa pseudoharengus*
Allegheny pearl dace	*Margariscus margarita*
American brook lamprey a/	*Lampetra appendix*
American eel	*Anguilla rostrata*
Atlantic salmon b/	*Salmo salar*
Banded darter	*Etheostoma zonale*
Banded killifish	*Fundulus diaphanus*
Bigeye chub	*Notropis amblops*
Bigmouth buffalo c/	*Ictiobus cyprinellus*
Bigmouth chub	*Nocomis platyrhynchus*
Bigmouth shiner c/	*Hybopsis dorsalis*
Black buffalo	*Ictiobus niger*
Black bullhead c/	*Ameiurus melas*
Black crappie	*Pomoxis nigromaculatus*
Black redhorse	*Moxostoma duquesnei*
Blackchin shiner c/	*Notropis heterodon*
Blacknose dace	*Rhinichthys atratulus*
Blacknose shiner	*Notropis heterolepis*
Blackside darter	*Percina maculata*
Bluebreast darter c/	*Etheostoma camurum*
Blueside shiner	*Lythrurus ardens*
Blue catfish d/	*Ictalurus furcatus*
Blue sucker d/	*Cycleptus elongatus*
Bluegill	*Lepomis macrochirus*
Bluntnose minnow	*Pimephales notatus*
Bowfin c/	*Amia calva*
Brassy minnow	*Hybognathus hankinsoni*
Brindled madtom c/	*Noturus miurus*
Brook silverside a/	*Labidesthes sicculus*
Brook stickleback c/	*Culaea inconstans*
Brook trout	*Salvelinus fontinalis*
Brown bullhead	*Ameiurus nebulosus*
Brown trout b/	*Salmo trutta*
Bullhead minnow d/	*Pimephales vigilax*
Burbot c/	*Lota lota*
Central mudminnow c/	*Umbra limi*
Central stoneroller	*Campostoma anomalum*

Appendix 3-A **Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion**	
Chain pickerel b/	*Esox niger*
Channel catfish	*Ictalurus punctatus*
Channel darter a/	*Percina copelandi*
Channel shiner	*Notropis wickliffi*
Common carp b/	*Cyprinus carpio*
Common shiner	*Luxilus cornutus*
Creek chub	*Semotilus atromaculatus*
Creek chubsucker	*Erimyzon oblongus*
Eastern mosquitofish	*Gambusia holbrooki*
Eastern sand darter c/	*Ammocrypta pellucida*
Emerald shiner	*Notropis atherinoides*
Fallfish b/	*Semotilus corporalis*
Fantail darter	*Etheostoma flabellare*
Fathead minnow	*Pimephales promelas*
Flathead catfish	*Pylodictis olivaris*
Freshwater drum	*Aplodinotus grunniens*
Ghost shiner c/	*Notropis buchanani*
Gilt darter c/	*Percina evides*
Gizzard shad	*Dorosoma cepedianum*
Gravel chub c/	*Erimystax x-punctatus*
Golden redhorse	*Moxostoma erythrurum*
Golden shiner	*Notemigonus crysoleucas*
Golden rainbow trout b/	*Oncorhynchus mykiss*
Goldeye d/	*Hiodon alosoides*
Goldfish b/	*Carassius auratus*
Grass carp b/	*Ctenopharynogodon idella*
Grass pickerel	*Esox americanus vermiculatus*
Green sunfish	*Lepomis cyanellus*
Greenside darter	*Etheostoma blennioides*
Highfin carpsucker d/	*Carpiodes velifer*
Hornyhead chub c/	*Nocomis biguttatus*
Iowa darter	*Etheostoma exile*
Johnny darter	*Etheostoma nigrum*
Kanawha minnow	*Phenacobius teretulus*
Lake sturgeon c/	*Acipenser fulvescens*
Largemouth bass	*Micropterus salmoides*
Least brook lamprey c/	*Lampetra aepyptera*
Logperch	*Percina caprodes*

Appendix 3-A **Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion**	
Longear sunfish c/	*Lepomis megalotis*
Longhead darter a/	*Percina macrocephala*
Longnose dace	*Rhinichthys cataractae*
Longnose gar a/	*Lepisosteus osseus*
Longnose sucker c/	*Catostomus catostomus*
Margined madtom	*Noturus insignis*
Mimic shiner	*Notropis volucellus*
Mooneye a/	*Hiodon tergisus*
Mottled sculpin	*Cottus bairdi*
Mountain brook lamprey c/	*Ichthyomyzon greeleyi*
Mountain madtom c/	*Noturus eleutherus*
Muskellunge	*Esox masquinongy*
Mummichog b/	*Fundulus heteroclitus*
New River shiner	*Notropis scabriceps*
Northern brook lamprey	*Ichthyomyzon fossor*
Northern hogsucker	*Hypentelium nigricians*
Northern madtom c/	*Noturus stigmosus*
Northern pike	*Esox lucius*
Northern redbelly dace c/	*Chrosomus eos*
Northern studfish	*Fundulus catenatus*
Ohio lamprey	*Ichthyomyzon bdellium*
Orange spotted sunfish	*Lepomis humilis*
Paddlefish	*Polyodon spathula*
Popeye shiner d/	*Notropis ariommus*
Pugnose minnow	*Opsopoeodus emiliae*
Pumpkinseed	*Lepomis gibbosus*
Quillback	*Carpiodes cyprinus*
Rainbow darter	*Etheostoma caeruleum*
Rainbow trout b/	*Oncorhynchus mykiss*
Redbreast sunfish	*Lepomis auritus*
Redear sunfish b/	*Lepomis microlophus*
Redfin shiner c/	*Lythrurus umbratilus*
Redside dace	*Clinostomus elongatus*
River carpsucker	*Carpiodes carpio*
River chub	*Nocomis micropogon*
River darter	*Percina shumardi*
River redhorse a/	*Moxostoma carinatum*
River shiner c/	*Notropis blennius*

Appendix 3-A **Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion**	
Rock bass	*Ambloplites rupestris*
Rosyface shiner	*Notropis rubellus*
Rosyside dace	*Clinostomus funduloides*
Rudd minnow e/	*Scardinius erythrophthalmus*
Sand shiner	*Notropis stramineus*
Sauger	*Stizostedion canadense*
Sharpnose darter d/	*Percina oxyrhynchus*
Shorthead redhorse	*Moxostoma macrolepidotum*
Shortnose gar d/	*Lepisosteus platostomus*
Shovelnose sturgeon d/	*Scaphirhynchus platorynchus*
Silver chub a/	*Macrhybopsis storeriana*
Silver lamprey	*Ichthyomyzon unicuspis*
Silver redhorse	*Moxostoma anisurum*
Silver shiner	*Notropis photogenis*
Silverjaw minnow	*Notropis buccatus*
Skipjack herring a/	*Alosa chrysochloris*
Smallmouth bass	*Micropterus dolomieu*
Smallmouth buffalo a/	*Ictiobus bubalus*
Smallmouth redhorse	*Moxostoma anisurum*
Southern redbelly dace c/	*Chrosomus erythrogaster*
Spotfin shiner	*Cyprinella spiloptera*
Spottail shiner b/	*Notropis hudsonius*
Spotted bass	*Micropterus punctulatus*
Spotted darter c/	*Etheostoma maculatum*
Spotted sucker c/	*Minytrema melanops*
Steelcolor shiner	*Cyprinella whipplei*
Stonecat	*Noturus flavus*
Streamline chub	*Erimystax dissimilis*
Stripeback darter	*Percina notogramma*
Striped bass	*Morone saxatillis*
Striped bass hybrid	*Morone chrysops x M. saxatilis*
Striped shiner	*Luxilus chrysocephalus*
Tadpole madtom c/	*Notorus gyrinus*
Telescope shiner	*Notropis telescopus*
Threadfin shad	*Dorosoma petenense*
Tiger muskellunge b/	*Esox lucius x E. masquinony*
Tippecanoe darter c/	*Etheostoma tippecanoe*
Tonguetied minnow	*Exoglossum laurae*

Appendix 3-A

Typical Fish Species Found in Waterbodies of the Ohio River Basin and the Permian Hills Level IV Ecoregion

Torrent sucker	*Thoburnia rhothoecum*
Trout perch	*Percopsis omiscomaycus*
Variegate darter	*Etheostoma variatum*
Walleye	*Stizostedion vitreum*
Warmouth c/	*Lepomis gulosus*
White bass	*Morone chrysops*
White catfish b/	*Ameiurus catus*
White crappie	*Pomoxis annularis*
White perch b/	*Morone americana*
White shiner	*Luxilus albeolus*
White sucker	*Catostomus commersoni*
Whitetail shiner	*Cyprinella galactura*
Yellow bullhead	*Ameiurus natalis*
Yellow perch	*Perca flavescens*

Sources:

West Virginia Department of Environmental Protection. 2015. Fishes of West Virginia. http://www.dep.wv.gov/WWE/getinvolved/sos/Pages/Fishes.aspx Accessed 07 June 2015.

Pennsylvania Fish and Boat Commission. 2015b. Gallery of Pennsylvania Fishes. Chapter 2 – Pennsylvania Species by Watershed. http://fishandboat.com/pafish/fishhtms/chap2.htm Accessed 07 June 2015.

a/ Delisted species

b/ Introduced species

c/ State or federally listed or candidate species

d/ Thought to be extirpated

e/ Invasive species

Mountain Valley Pipeline Project

Docket No. PF15-22

Resource Report 3

Appendix 3-B
Wildlife Species with the Potential to Occur Along the Project Route

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Amphibians	
Allegheny mountain dusky salamander	*Desmognathus ochrophaeus*
American bullfrog	*Lithobates catesbeianus*
American toad	*Bufo americanus*
Black mountain salamander	*Desmognathus welteri*
Black-bellied salamander	*Desmognathus quadramaculatus*
Common mudpuppy	*Necturus maculosus*
Cumberland plateau salamander	*Plethodon kentucki)*
Eastern American toad	*Anaxyrus americanus americanus*
Eastern hellbender	*Cryptobranchus alleganiensis*
Eastern red-backed salamander	*Plethodon cinereus*
Eastern red-spotted newt	*Notophthalmus viridescens viridescens*
Four-toed salamander	*Hemidactylium scutatum*
Fowler's toad	*Bufo fowleri*
Gray treefrog	*Hyla versicolor*
Green frog	*Lithobates clamitans*
Green salamander	*Aneides aeneus*
Jefferson salamander	*Ambystoma jeffersonianum*
Long-tailed salamander	*Eurycea longicauda longicauda*
Marbled salamander	*Ambystoma opacum*
Midland mud salamander	*Pseudotriton montanus diastictus*
Mountain chorus frog	*Pseudacris brachyphona*
Northern dusky salamander	*Desmognathus fuscus*
Northern green frog	*Rana clamitans melanota*
Northern leopard frog	*Rana pipiens*
Northern ravine salamander	*Plethodon electromorphus*
Northern red salamander	*Pseudotriton ruber ruber*
Northern slimy salamander	*Plethodon glutinosus*
Northern spring salamander	*Gyrinophilus porphyriticus porphyriticus*
Northern two-lined salamander	*Eurycea bislineata*
Pickerel frog	*Lithobates sylvaticus*
Red-spotted newt	*Notophthalmus viridescens*
Seal salamander	*Desmognathus monticola*
Small-mouthed salamander	*Ambystoma texanum*
Southern ravine salamander	*Plethodon richmondi*
Southern two-lined salamander	*Eurycea cirrigera*
Spotted salamander	*Ambystoma maculatum*
Spring peeper	*Pseudacris crucifer*
Spring salamander	*Gyrinophilus porphyriticus*
Streamside salamander	*Ambystoma barbouri*
Upland chorus frog	*Pseudacris feriarum*
Wehrle's salamander	*Plethodon wehrlei*
White-spotted slimy salamander	*Plethodon cylindraceus*

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Wood frog	*Rana sylvatica*
Reptiles	
Black ratsnake	*Elaphe obsoleta*
Common five-lined skink	*Plestiodon fasciatus*
Common ribbonsnake	*Thamnophis sauritus*
Common watersnake	*Nerodia sipedon*
Eastern black kingsnake	*Lampropeltis getula niger*
Eastern box turtle	*Terrapene carolina carolina*
Eastern fence lizard	*Sceloporus undulatus*
Eastern gartersnake	*Thamnophis sirtalis sirtalis*
Eastern hog-nosed snake	*Heterodon platirhinos*
Eastern milksnake	*Lampropeltis triangulum triangulum*
Eastern painted turtle	*Chrysemys picta picta*
Eastern ratsnake	*Pantherophis alleghaniensis*
Eastern smooth earthsnake	*Virginia valeriae*
Eastern wormsnake	*Carphophis amoenus amoenus*
Mountain earthsnake	*Virginia valeriae pulchra*
Northern black racer	*Coluber constrictor constrictor*
Northern brownsnake	*Storeria dekayi*
Northern copperhead	*Agkistrodon contortrix mokasen*
Northern pinesnake	*Lampropeltis getula*
Northern red-bellied Snake	*Storeria occipitomaculata*
Northern ring-necked snake	*Diadophis punctatus edwardsii*
Northern rough greensnake	*Opheodrys aestivus*
Northern watersnake	*Nerodia sipedon sipedon*
Queensnake	*Regina septemvittata*
Smooth greensnake	*Opheodrys vernalis*
Snapping turtle	*Chelydra serpentina*
Timber rattlesnake	*Crotalus horridus*
Birds	
Acadian flycatcher	*Empidonax virescens*
American bittern	*Botaurus lentiginosus*
American black duck	*Anas rubripes*
American coot	*Fulica Americana*
American crow	*Corvus brachyrhynchos*
American goldfinch	*Spinus tristis*
American kestrel	*Falco sparverius*
American pipit	*Anthus rubescens*
American redstart	*Setophaga ruticilla*
American robin	*Turdus migratorius*
American tree sparrow	*Spizella arborea*
American woodcock	*Scolopax minor*
Bald eagle	*Haliaeetus leucocephalus*
Baltimore oriole	*Icterus galbula*

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Bank swallow	*Riparia riparia*
Barn owl	*Tyto alba*
Barn swallow	*Hirundo rustica*
Barred owl	*Strix varia*
Bay-breasted warbler	*Setophaga castanea*
Belted kingfisher	*Megaceryle alcyon*
Bewick's wren	*Thryomanes bewickii*
Black vulture	*Coragyps atratus*
Black-and-white warbler	*Mniotilta varia*
Black-billed cuckoo	*Coccyzus erythropthalmus*
Blackburnian warbler	*Setophaga fusca*
Black-capped chickadee	*Poecile atricapillus*
Blackpoll warbler	*Setophaga striata*
Black-throated blue warbler	*Setophaga caerulescens*
Black-throated green warbler	*Setophaga virens*
Blue grosbeak	*Passerina caerulea*
Blue jay	*Cyanocitta cristata*
Blue-gray gnatcatcher	*Polioptila caerulea*
Blue-headed vireo	*Vireo solitarius*
Blue-winged teal	*Anas discors*
Blue-winged warbler	*Vermivora cyanoptera*
Bobolink	*Dolichonyx oryzivorus*
Broad-winged hawk	*Buteo platypterus*
Brown creeper	*Certhia americana*
Brown thrasher	*Toxostoma rufum*
Brown-headed cowbird	*Molothrus ater*
Bufflehead	*Bucephala albeola*
Canada goose	*Branta canadensis*
Canada warbler	*Cardellina canadensis*
Cape May warbler	*Setophaga tigrina*
Carolina chickadee	*Poecile carolinensis*
Carolina wren	*Thryothorus ludovicianus*
Cedar waxwing	*Bombycilla cedrorum*
Cerulean warbler	*Setophaga cerulea*
Chestnut-sided warbler	*Setophaga pensylvanica*
Chimney swift	*Chaetura pelagica*
Chipping sparrow	*Spizella passerina*
Cliff swallow	*Petrochelidon pyrrhonota*
Common goldeneye	*Bucephala clangula*
Common grackle	*Quiscalus quiscula*
Common merganser	*Mergus merganser*
Common nighthawk	*Chordeiles minor*
Common raven	*Corvus corax*
Common redpoll	*Acanthis flammea*

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Common yellowthroat	*Geothlypis trichas*
Cooper's hawk	*Accipiter cooperii*
Dark-eyed junco	*Junco hyemalis*
Dickcissel	*Spiza Americana*
Downy woodpecker	*Picoides pubescens*
Eastern bluebird	*Sialia sialis*
Eastern kingbird	*Tyrannus tyrannus*
Eastern meadowlark	*Sturnella magna*
Eastern phoebe	*Sayornis phoebe*
Eastern screech owl	*Megascops asio*
Eastern towhee	*Pipilo erythropthalmus*
Eastern whip-poor-will	*Antrostomus vociferous*
Eastern wood-pewee	*Contopus virens*
Evening grosbeak	*Coccothraustes vespertinus*
Field sparrow	*Spizella pusilla*
Fox sparrow	*Passerella iliaca*
Golden-crowned kinglet	*Regulus satrapa*
Golden-winged warbler	*Vermivora chrysoptera*
Grasshopper sparrow	*Ammodramus savannarum*
Gray catbird	*Dumetella carolinensis*
Gray-cheeked thrush	*Catharus minimus*
Great blue heron	*Ardea herodias*
Great crested flycatcher	*Myiarchus crinitus*
Great egret	*Ardea alba*
Great horned owl	*Bubo virginianus*
Greater scaup	*Aythya marila*
Green heron	*Butorides virescens*
Green-winged teal	*Anas crecca*
Hairy woodpecker	*Picoides villosus*
Hermit thrush	*Catharus guttatus*
Hooded merganser	*Lophodytes cucullatus*
Hooded warbler	*Setophaga citrine*
House finch	*Haemorhous mexicanus*
House wren	*Troglodytes aedon*
Indigo bunting	*Passerina cyanea*
Kentucky warbler	*Geothlypis formosa*
Killdeer	*Charadrius vociferous*
Least bittern	*Ixobrychus exilis*
Lesser scaup	*Aythya affinis*
Lincoln's sparrow	*Melospiza lincolnii*
Loggerhead shrike	*Lanius ludovicianus*
Louisiana waterthrush	*Parkesia motacilla*
Magnolia warbler	*Setophaga magnolia*
Mallard	*Anas platyrhynchos*

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Mourning dove	*Zenaida macroura*
Mourning warbler	*Geothlypis philadelphia*
Nashville warbler	*Oreothlypis ruficapilla*
Northern cardinal	*Cardinalis cardinalis*
Northern flicker	*Colaptes auratus*
Northern goshawk	*Accipiter gentilis*
Northern harrier	*Circus cyaneus*
Northern mockingbird	*Mimus ployglottos*
Northern parula	*Setophaga americana*
Northern pintail	*Anas acuta*
Northern rough-winged swallow	*Stelgidopteryx serripennis*
Northern saw-whet owl	*Aegolius acadicus*
Northern waterthrush	*Parkesia noveboracensis*
Olive-sided flycatcher	*Contopus cooperi*
Orange-crowned warbler	*Oreothlypis celata*
Orchard oriole	*Icterus spurius*
Osprey	*Pandion haliaetus*
Ovenbird	*Seirus aurocapilla*
Palm warbler	*Setophaga palmarum*
Pied-billed grebe	*Podilymbus podiceps*
Pileated woodpecker	*Dryocopus pileatus*
Pine siskin	*Spinus pinus*
Pine warbler	*Setophaga pinus*
Prairie warbler	*Setophaga discolor*
Prothonotary warbler	*Protonotaria citrea*
Purple finch	*Haemorhous purpureus*
Red crossbill	*Loxia curvirostra*
Red-bellied woodpecker	*Melanerpes carolinus*
Red-breasted nuthatch	*Sitta canadensis*
Red-crowned kinglet	*Regulus calendula*
Red-eyed vireo	*Vireo olivaceus*
Redhead	*Aythya americana*
Red-headed woodpecker	*Melanerpes erythrocephalus*
Red-shouldered hawk	*Buteo lineatus*
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius phoeniceus*
Ring-necked duck	*Aythya collaris*
Rose-breasted grosbeak	*Pheucticus ludovicianus*
Ruby-throated hummingbird	*Archilochus colubris*
Ruffed grouse	*Bonasa umbellus*
Savannah sparrow	*Passerculus sandwichensis*
Scarlet tanager	*Piranga olivacea*
Sharp-shinned hawk	*Accipiter striatus*
Short-eared owl	*Asio flammeus*

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Song sparrow	*Melospiza melodia*
Summer tanager	*Piranga rubra*
Swainson's thrush	*Catharus ustulatus*
Swainson's warbler	*Limnothlypis swainsonii*
Swamp sparrow	*Melospiza georgiana*
Tennessee warbler	*Oreothlypis peregrina*
Tree swallow	*Tachycineta bicolor*
Tufted titmouse	*Baeolophus bicolor*
Turkey vulture	*Cathartes aura*
Veery	*Catharus fuscescens*
Vesper sparrow	*Pooecetes gramineus*
Warbling vireo	*Vireo gilvus*
White-breasted nuthatch	*Sitta carolinensis*
White-crowned sparrow	*Zontrichia leucophrys*
White-eyed vireo	*Vireo griseus*
White-throated sparrow	*Zonotrichia albicollis*
Wild turkey	*Meleagris gallopavo*
Willow flycatcher	*Empidonax traillii*
Wilson's warbler	*Cardellina pusilla*
Winter wren	*Troglodytes hiemalis*
Wood duck	*Aix sponsa*
Wood thrush	*Hylocichla mustelina*
Worm-eating warbler	*Helmitheros vermivorum*
Yellow warbler	*Setophaga petechia*
Yellow-bellied sapsucker	*Sphyrapicus varius*
Yellow-billed cuckoo	*Coccyzus americanus*
Yellow-breasted chat	*Icteria virens*
Yellow-rumped warbler	*Setophaga coronate*
Yellow-throated vireo	*Vireo flavifrons*
Yellow-throated warbler	*Setophaga dominica*
Mammals	
Allegheny wood rat	*Neotoma magister*
American beaver	*Castor canadensis*
American black bear	*Ursus americanus*
Appalachian cottontail	*Sylvilagus obscurus*
Big brown bat	*Eptesicus fuscus*
Black bear	*Ursus americanus*
Bobcat	*Lynx rufus*
Common porcupine	*Erethizon dorsatum*
Common raccoon	*Procyon lotor*
Coyote	*Canis latrans*
Deer mouse	*Peromyscus maniculatus*
Eastern chipmunk	*Tamias striatus*
Eastern cottontail	*Sylvilagus floridanus*

Appendix 3-B Wildlife Species with the Potential to Occur Along the Project Route	
Common Name	**Scientific Name**
Eastern cottontail	*Sylvilagus floridanus*
Eastern gray squirrel	*Sciurus carolinensis*
Eastern harvest mouse	*Reithrodontomys humulis*
Eastern mole	*Scalopus aquaticus*
Eastern pipistrelle	*Pipistrellus subflavus*
Eastern red bat	*Lasiurus borealis*
Eastern small-footed bat	*Myotis leibii*
Eastern spotted skunk	*Spilogale putorius*
Evening bat	*Nycticeius humeralis*
Feral or domestic dog	*Canis familiaris*
Feral or house cat	*Felis catus*
Fisher	*Martes pennanti*
Fox squirrel	*Sciurus niger*
Golden mouse	*Ochrotomys nuttalli*
Gray bat	*Myotis grisescens*
Gray fox	*Urocyron cinereoargenteus*
Groundhog	*Marmota monax*
Hairy-tailed mole	*Parascalops breweri*
Hoary bat	*Lasiurus cinereus*
Indiana bat	*Myotis sodalis*
Least shrew	*Cryptotis parva*
Little brown bat	*Myotis lucifugus*
Long-tailed shrew	*Sorex dispar*
Long-tailed weasel	*Mustela frenata*
Masked shrew	*Sorex cinereus*
Meadow jumping mouse	*Zapus hudsonius*
Meadow vole	*Microtus pennsylvanicus*
Mink	*Mustela vison*
Mountain lion	*Puma concolor*
Muskrat	*Ondatra zibethicus*
Northern long-eared bat	*Myotis septentrionalis*
Northern short-tailed shrew	*Blarina brevicauda*
Prairie vole	*Microtus ochrogaster*
Pygmy shrew	*Sorex hoyi*
Rafinesque's big-eared bat	*Corynorhinus rafinesquii*
Red fox	*Vulpes vulpes*
Red squirrel	*Tamiasciurus hudsonicus*
River otter	*Lutra canadensis*
Rock vole	*Microtus chrotorrhinus*
Silver-haired bat	*Lasionycteris noctivagans*
Smoky shrew	*Sorex fumeus*
Snowshoe hare	*Lepus americanus*
Southeastern shrew	*Sorex longirostris*
Southern bog lemming	*Synaptomys cooperi*

Appendix 3-B

Wildlife Species with the Potential to Occur Along the Project Route

Common Name	Scientific Name
Southern flying squirrel	*Glaucomys volans*
Southern red-backed vole	*Clethrionomys gapperi*
Star-nosed mole	*Condylura cristata*
Striped skunk	*Mephitis mephitis*
Tri-colored bat	*Perimyotis subflavus*
Virginia big-eared bat	*Corynorhinus townsendii*
Virginia opossum	*Didelphis virginiana*
Virginia white-tailed deer	*Odocoileus virginianus virginianus*
Water shrew	*Sorex palustris*
West Virginia northern flying squirrel	*Glaucomys sabrinus*
White-footed mouse	*Peromyscus leucopus*
Woodland jumping mouse	*Napaeozapus insignis*
Woodland vole	*Microtus pinetorum*

Sources:

Marshall University. No Date. Amphibians and Reptiles in West Virginia. http://www.marshall.edu/herp/WVHERPS.HTM; accessed June 9, 2015.

West Virginia Division of Natural Resources. 2015. http://www.wvdnr.gov/wildlife/animals.shtm; accessed June 5, 2015.