



**MIGRATORY BIRD
HABITAT CONSERVATION PLAN**

**SUNOCO PIPELINE L.P.
PENNSYLVANIA PIPELINE PROJECT**

**WASHINGTON, ALLEGHENY, WESTMORELAND,
INDIANA, CAMBRIA, BLAIR, HUNTINGDON,
JUNIATA, PERRY, CUMBERLAND, YORK,
DAUPHIN, LEBANON, LANCASTER, BERKS,
CHESTER, AND DELAWARE COUNTIES,
PENNSYLVANIA**



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LIST OF ACRONYMS

| | |
|------------|---|
| BGEPA | Bald and Golden Eagle Protection Act |
| BCC | Birds of Conservation Concern |
| BCR | Bird Conservation Region |
| BMP | Best Management Practice |
| EI | Environmental Inspector |
| ESA | Endangered Species Act |
| HDD | Horizontal Directional Drill |
| IBA | Important Bird Area |
| MBTA | Migratory Bird Treaty Act |
| NGL | Natural Gas Liquid |
| PA | Pennsylvania |
| PADEP | Pennsylvania Department of Environmental Protection |
| PFO | Palustrine forested |
| PGC | Pennsylvania Game Commission |
| Plan | Migratory Bird Habitat Conservation Plan |
| Project | Pennsylvania Pipeline Project |
| psig | Per square inch gauge |
| PSS | Palustrine scrub-shrub |
| ROW | Right-of-Way |
| SPLP | Sunoco Logistics L.P. |
| Tetra Tech | Tetra Tech, Inc. |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | United States Geological Survey |

1.0 INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) was contracted by Sunoco Logistics L.P. (SPLP) to obtain the environmental permits and approvals required for its proposed Mariner East, Pennsylvania Pipeline Project (PPP or Project). The proposed Project consists of the construction of both new facilities and modifications to existing natural gas liquid transmission facilities located in Washington, Allegheny, Westmoreland, Indiana, Cambria, Blair, Huntingdon, Juniata, Perry, Cumberland, York, Dauphin, Lebanon, Lancaster, Berks, Chester, and Delaware Counties, Pennsylvania. A Project location map is provided in Appendix A. Construction requires clearing of vegetation, ground disturbances, and pipeline and facility installation which may occur during breeding and nesting seasons for migratory songbirds. Operation of the pipeline requires regular maintenance mowing of the permanent ROW to maintain visual inspection requirements established by the Department of Transportation.

This Migratory Bird Habitat Conservation Plan (Plan) provides a summary of habitat types of the Project area, the impacts to those habitats and migratory birds from construction of the Project, and measures that will allow for the conservation of bird species protected under the Migratory Bird Treaty Act (MBTA) of 1918 (U.S. Fish and Wildlife Service [USFWS] 2011), and the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. §§ 668-668d, USFWS 2007). The major focus of this plan is to present the pre-construction conservation measures already implemented into the Project routing and design to reduce impacts to wildlife habitats, as well as outline those conservation measures to be implemented during construction to ensure potential impacts are minimized. Due to the range of habitats occupied by the variety of migratory bird species with the varying levels of potential to occur in the Project areas, preconstruction efforts focused primarily on the reduction of the overall Project footprint, especially in sensitive areas known to provide habitat for migratory birds.

1.1 PROJECT OVERVIEW

The Project includes two new, 20-inch and 16-inch diameter pipelines installed within or adjacent to 306.8 miles of existing or new ROW corridors. The majority of the new ROW will be co-located adjacent to existing utility corridors, including approximately 230 miles of pipeline that will be co-located in the existing SPLP Mariner East pipeline system that is currently used for the transportation of NGL's. The following provides the details of the proposed pipeline facilities:

- Pipeline 1: Houston, Pennsylvania to Marcus Hook, Pennsylvania – This is an incremental expansion of the capacities of SPLP to transport NGLs to the Marcus Hook facility. This Phase of the Project will include a 20 inch diameter steel pipeline, pump stations, and valve settings. The route of the pipeline is either inside or adjacent to the existing SPLP pipeline corridor for a majority of its length and is approximately 306.8 miles long (Table 1).
- Pipeline 2: Delmont, Pennsylvania to Marcus Hook, Pennsylvania –The pipeline route for the second 16-inch pipeline will include 255.8 miles of pipeline that will parallel Pipeline 1 (Table 1).

Table 1. Pennsylvania Pipeline Project – Pipeline Facilities

| Type of Facility | Description | State | Pipeline 1 Length (miles) | Pipeline 2 Length (miles) | Pipeline 1 (limit of disturbance acres) | Pipeline 2 (limit of disturbance acres) | County |
|------------------|--|-------|---------------------------|---------------------------|---|---|--------------|
| Pipeline | Installation of a 20-inch new butane/propane line from Houston PA to Marcus Hook, PA and a 16-inch new ethane line in parallel from Delmont, PA to Marcus Hook, PA | PA | 19.1 | 0.0 | 189 | 0 | Washington |
| | | | 9.0 | 0.0 | 97 | 0 | Allegheny |
| | | | 38.3 | 15.4 | 374 | 157 | Westmoreland |
| | | | 19.4 | 19.4 | 202 | 202 | Indiana |
| | | | 23.5 | 23.5 | 241 | 241 | Cambria |
| | | | 23.5 | 23.5 | 227 | 227 | Blair |
| | | | 26.9 | 26.9 | 264 | 264 | Huntingdon |
| | | | 3.0 | 3.0 | 33 | 33 | Juniata |
| | | | 10.8 | 10.8 | 117 | 117 | Perry |
| | | | 32.0 | 32.0 | 304 | 304 | Cumberland |
| | | | 6.3 | 6.3 | 68 | 68 | York |
| | | | 12.0 | 12.0 | 117 | 117 | Dauphin |
| | | | 19.8 | 19.8 | 216 | 216 | Lebanon |
| | | | 6.9 | 6.9 | 71 | 71 | Lancaster |
| | | | 21.2 | 21.2 | 230 | 230 | Berks |
| 23.6 | 23.6 | 165 | 165 | Chester | | | |
| 11.5 | 11.5 | 93 | 93 | Delaware | | | |
| | Project Total | | 306.8 | 255.8 | 3,008 | 2,505 | |

Aboveground Facilities

Aboveground facilities include pump station construction and modification (Table 2) and block valve construction and modification (Table 3):

- Houston, Pennsylvania has an existing facility which will connect to the pipeline. This Project will install meters on the outlets from existing storage, injection pumps, control valves, associated piping and accessory structures. New land disturbance will be required to accommodate the injection station component.
- Delmont, Pennsylvania has an existing facility and this Project will expand the pump station with added booster pumps, associated piping and accessory structures. Some new land disturbance within the existing station site will be required to accommodate this modification.
- Ebensburg, Pennsylvania, SPLP will construct a new pump station with booster pumps, leak detection metering, associated piping and accessory structures adjacent to an existing station. Some new land disturbance within the existing station site will be required to accommodate this modification.

- Mount Union, Pennsylvania has an existing pump station and this Project will expand the pump station with added piping, pig traps and valves. Some new land disturbance will be required to accommodate this modification.
- Doylesburg, Pennsylvania has an existing pump station and this Project will expand the pump station with added booster pumps, associated piping and accessory structures. Some new land disturbance will be required to accommodate this modification.
- Middletown, Pennsylvania has an existing pump station and this Project will expand the pump station with added booster pumps, associated piping and accessory structures. Some new land disturbance will be required to accommodate this modification.
- Beckersville, Pennsylvania has an existing pump station and this Project will expand the pump station with added piping, pig traps and valves. Some new land disturbance will be required to accommodate this modification.
- Twin Oaks, Pennsylvania is an existing site and this Project will install custody transfer meters and control valves. Some new land disturbance within the existing facility will be required to accommodate this modification.
- There are 53 mainline block valve sets planned for this Project, of which 22 are sited at existing valve sites, and 5 are sited at existing pump stations (Table 3). Block valves are installed for the purpose of shutting off sections of the pipeline to allow maintenance or to stop flow in the case of emergencies. Block valves are installed in accordance with U. S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) requirements, and reference recommendations from American Society of Mechanical Engineers (ASME) B. PHMSA requires block valves to be installed on the suction end and discharge end of a pump station, at locations along the pipeline system that will minimize damage or pollution from accidental hazardous liquid discharge, and on each side of a major water crossing. SPLP has determined that in the interest of facilitating operational control it will place block valves at every railroad crossing, at every water crossing wider than 100 feet, and at a minimum of one per 10 miles with closer densities in areas with denser populations.

1.2 BACKGROUND

Migratory Bird Treaty Act

Birds species with the potential to occur in the Project area do include those listed under the MBTA (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755, as amended) (USFWS 2011). The USFWS is the principal Federal agency charged with protecting and enhancing populations and habitat of migratory bird species. A migratory bird is any species or family of birds that live or reproduce in or migrate across international borders at some point during their annual life cycle. The MBTA established Federal responsibilities for protecting nearly all species of birds and their eggs and nests (USFWS 2011). A total of 1,007 species are protected under the MBTA (USFWS 2011). Those species not protected by the MBTA include game birds, such as the ring-necked pheasant and wild turkey, and non-native invasive species, such as the European starling and house sparrow. A baseline list of migratory birds for Project consideration and their associated nesting habitats are provided in Appendix B.

United States Fish and Wildlife Service Birds of Conservation Concern

The USFWS Birds of Conservation Concern (BCC) are those species, subspecies, and populations of migratory and non-migratory birds that the USFWS has determined to be the highest priority for conservation actions (USFWS 2008). The purpose of the BCC list is to prevent or remove the need for additional Endangered Species Act (ESA) bird listings by implementing proactive management and conservation actions needed to conserve these species. The USFWS maintains a list of BCC (USFWS 2008) in which species are prioritized and listed by Bird Conservation Regions (BCRs). The United States is divided into 35 different BCRs. The Project area is located in BCR 28, the Appalachian Mountains Region and 29, the Piedmont Region.

2.0 EVALUATION

Senior Environmental Scientists from Tetra Tech conducted a general habitat assessment of the land types and habitats crossed during wetland and waterbody delineation field surveys completed for the Project in 2014, 2015, and 2016. Surveyors recorded general habitat locations and condition, plant species composition, vegetation age class, and notable habitat features (e.g., snags, large diameter trees or woody debris, rock outcroppings). Additionally, desktop review of existing information, research and survey data was conducted to compile available avian occurrence, natural history and habitat requirements, and habitat information for the Project area. Pennsylvania Breeding Bird Atlas data (Wilson et al. 2012) for the census blocks that covered the Project areas were compared with the BCC data for the corresponding county to determine a baseline avian species for the Project. This data was used to develop a general species list for consideration during conservation measure planning.

Desktop analysis of existing site information and available data included review of the following resources:

- 2nd Pennsylvania Breeding Bird Atlas 2000–2009 (Survey Blocks 70B36, 70C41, 71C42, 71C51, 71C52, 71C61, 71C62, 71C71, 71C72, 72C11, 72B15, 72B16, 72B14, 72B12, 72A25, 72A23, 72A24, 72A33, 72A34, 72A43, 73A44, 73A53, 73A54, 73A63, 73A64, 73A73, 73A74, 74A13, 74A14, 74A23, 74A24, 74A33, 74A35, 74A36, 74A45, 74A45, 75A55, 75A53, 75A54, 75A63, 75A66, 75A75, 75B72, 76B11, 76B12, 76B21, 76B23, 76B24, 76B33, 76B34, 76B36, 76B45, 77B46, 77B55, 77C52, 77C61, 77C62, 77C71, 77C72, 78C11, 78C14, 78C23, 78C24, 78C33, 78C34, 78C41, 79C42, 79C51, 79B55, 79B56, 79B65, 79B66, 79B75, 79B76, 80B15, 80B16, 80B25, 80B23, 80B24, 80B26, 80B35, 80C31, 80C34, 80C43, 80C45, 81C46, 81D42, 81D51, 81D53, 81D54, 81D56, 81D65, 95A61, 95A62, 95A64, 95A73, 95A75, 95A76, 95B72, 95A76, and 95B72) (Wilson et al. 2012);
- Identification of Important Bird Areas crossed by the Project (National Audubon Society 2013)
- Aerial photographs to identify general habitat types, drainages, and other landscape features;
- Cornell Lab of Ornithology, All About Birds online information resource (Cornell Lab of Ornithology 2011a);
- Cornell Lab of Ornithology, Birds of North America Online (Cornell Lab of Ornithology 2011b);
- Land use and cover type maps;
- U.S. Fish and Wildlife Service Migratory Bird Treaty Act website;
- United States Geological Survey (USGS) 7.5-minute series topographic maps;
- USFWS Birds of Conservation Concern 2008 (USFWS 2008); and,

- Wetland and waterbody data and maps.

Correspondence with State and Federal wildlife agencies also provide valuable information on the presence of wildlife and sensitive habitats, in particular state and federally listed sensitive species. The Pennsylvania Game Commission and USFWS were consulted on the presence of sensitive species early in the Project planning.

3.0 RESULTS

This section presents a description of the habitats traversed by the Project, and identifies the baseline migratory and BBC species lists (with their associated habitat preferences) and discusses the Important Bird Areas (IBAs) traversed by the Project.

3.1 HABITATS

Based on a habitat assessment, wetland delineation, and evaluation of satellite imagery, five primary habitat types occur in the Project area and include both upland and wetland/aquatic habitats as follows:

- Forest areas (deciduous, conifer, and mixed, including palustrine forested wetlands);
- Shrub areas (including palustrine scrub-shrub wetlands);
- Agricultural areas (farmed croplands, hay fields, pastures, orchards, and vineyards);
- Open areas (meadows, old fields, and emergent wetlands); and,
- Developed areas (existing roads, residential, and industrial/commercial use).

3.2 MIGRATORY BIRD SPECIES

Based on a review of available 2nd Pennsylvania Breeding Bird Atlas data, a baseline list of 159 species protected by MBTA was developed to assist with conservation planning (USFWS 2011, Wilson et al. 2012). A full list of these species is provided in Appendix B. In addition, game birds and non-native invasive species that occur in or near the Project area, but are not protected by the MBTA include ruffed grouse, wild turkey, rock pigeon, European starling, and house sparrow.

Birds protected by the MBTA typically nest and forage in the same general habitat types that are present within the Project area. Some species use the same habitat type for nesting and foraging while others forage in several types of habitats aside from where the nest is built. For example, many of the wood-warblers nest and forage only in forest habitat while some swallow species forage in a variety of habitats but nest only where suitable buildings or bank burrows exist.

Locations where species build their nests range from on the ground amid dense grass to thick shrubs to tall trees. A few species such as the eastern bluebird, eastern screech owl, hooded merganser, house wren, and red-bellied woodpecker may use artificial nest box cavities. The majority of the species that occur in or near the Project area build nests in trees. Some hawks, warblers, and flycatchers are examples of tree-nesting species. Ground-nesting species, such as some warblers, sparrows, and thrushes, also make up many of the species in the Project area. Other species may use man-made structures, bank burrows, or floating aquatic vegetation as nest sites. Additionally, many species may nest in more than one potential location (e.g., trees or shrubs, trees or on the ground, cliffs or trees).

3.3 BIRDS OF CONSERVATION CONCERN

Of the 159 MBTA bird species identified in Appendix B, 29 species are listed by the USFWS as BCC species (USFWS 2008). Some of these BCC species are also state listed, rare, threatened, and endangered (PGC 2013) (see Section 4.3 for agency consultation). The BCC species include:

- American bittern (*Botaurus lentiginosus*) (PA endangered);
- bald eagle (*Haliaeetus leucocephalus*) (PA threatened);
- black-billed cuckoo (*Coccyzus erythrophthalmus*);
- black-capped chickadee (*Poecile atricapillus*);
- blue-winged warbler (*Vermivora cyanoptera*);
- Canada warbler (*Cardellina canadensis*);
- cerulean warbler (*Setophaga cerulea*);
- fox sparrow (*Passerella iliaca*);
- golden-winged warbler (*Vermivora chrysoptera*);
- Henslow's sparrow (*Ammodramus henslowii*);
- Kentucky warbler (*Geothlypis formosa*);
- least bittern (*Ixobrychus exilis*) (PA endangered);
- Louisiana waterthrush (*Seiurus motacilla*);
- northern saw-whet owl (*Aegolius acadicus*);
- peregrine falcon (*Falco peregrinus*);
- pied-billed grebe (*Podilymbus podiceps*) (PA rare);
- prairie warbler (*Dendroica discolor*);
- prothonotary warbler (*Protonotaria citrea*);
- purple sandpiper (*Calidris maritima*);
- red knot (*Calidris canutus*);
- red-headed woodpecker (*Melanerpes erythrocephalus*);
- rusty blackbird (*Euphagus carolinus*);
- saltmarsh sparrow (*Ammodramus caudacutus*);
- short-eared owl (*Asio flammeus*) (PA endangered);
- snowy egret (*Egretta thula*);
- upland sandpiper (*Bartramia longicauda*) (PA endangered);
- wood thrush (*Hylocichla mustelina*);
- worm-eating warbler (*Helmitheros vermivorum*); and
- yellow-bellied sapsucker (*Sphyrapicus varius*).

In addition, based on the Pennsylvania Breeding Bird Atlas, several state-listed threatened and endangered species, that are not BCCs, are identified in Appendix B. These include; black-crowned night-heron (endangered), dickcissel (endangered), king rail (endangered), northern harrier (threatened), osprey (threatened) and sedge wren (endangered) (PGC 2013) (see Section 4.3 for agency consultation). The USFWS BCC species and their habitat associations and nesting periods are identified in Table 1.

Table 1. Birds of Conservation Concern

| Common Name | Breeding Habitat | Nest Location | Nesting Period ^a |
|-------------------------------------|--|---|--|
| American Bittern ^b | Freshwater wetlands with tall, emergent vegetation. Sparsely vegetated wetlands occasionally. | Placed among dense emergent vegetation over water 5-20 cm in depth. | Nest building: April-May. Egg laying to fledge: May-July. |
| Bald Eagle ^c | Forested areas adjacent to large bodies of water. | Tree nest, rarely on cliff faces. Nest tree generally one of the largest trees available with limbs capable of holding nest. Ground nests in treeless areas. | Nest building: varies, repair existing nests throughout the year. Egg laying to fledge: March-May (varies) |
| Black-billed Cuckoo ^d | Forest habitat. Habitats include woodlands and thickets, including aspen, poplar, birch, sugar maple, hickory, hawthorn, and willow. More likely to be found in deciduous than coniferous woods. | Tree nest. Typically located among leaves or tangles in deciduous trees, shrubs, or brambles (occasionally coniferous trees such as hemlock). Nests are usually less than 2.13 m (7 feet) off the ground but can be up to 15.24 m (50 feet) high. | Nest building: late May. Egg laying to fledge: Jun-July. |
| Black-capped Chickadee ^e | Deciduous and mixed deciduous/conifer woodlands, open woods and parks, willow thickets, and cottonwood groves. Also disturbed areas such as old fields or suburban areas. | Cavity nester. Nest height in tree commonly between 1.5 and 7 m. Will also use nest boxes. | Nest Building: March-April. Egg laying to fledge: April – July. |
| Blue-winged Warbler ^f | Forest habitat (early to mid-successional). Patchy deciduous and mixed young to mid-aged forests, abandoned farmland, and forest clearings. Habitat with patches of herbs, shrubs, and trees preferred. Typical habitats used in New York are comprised of a mosaic of dense herbs (10-20% cover), shrubs (15-25% cover), and trees greater than 5 m in height (23-33% cover). However, the density of vegetation found in preferred breeding habitat is variable. | Ground nest. Nests along forest/field edges, often in areas shaded by large trees. Nests on or near the ground, and typically at the base of goldenrods, berry bushes (<i>Rubus</i> spp.), and sometimes in a clump of grass-like vegetation. | Nest building: late April-early May. Egg laying to fledge: mid May-early July. |
| Canada Warbler ^g | Wide range of deciduous and coniferous forests. Most abundant in moist, mixed coniferous-deciduous forests with a well-developed understory. | Typically on or near the ground, often on slopes, knolls, in earthen banks, or rocky areas. | Nest building: mid-May-early Jun. Egg laying to fledge: end-May to end-June. |

| Common Name | Breeding Habitat | Nest Location | Nesting Period ^a |
|------------------------------------|--|--|--|
| Cerulean Warbler ^h | Mature and older deciduous forests with broken canopies. | Tree nests. Typically placed on lateral limb in mid-story or over-story canopy. | Nest building: Mid to late May. Egg laying to fledge: Late may/early June to early July. |
| Fox Sparrow ⁱ | Winters only. Dense thickets and wood edges. | Does not breed in PA, winters only. | Does not breed in PA, winters only. |
| Golden-winged Warbler ^j | Dense patches of herbaceous vegetation and shrubs with some taller trees throughout. | Typically on the ground, often at base of a cluster of leafy plant material. | Nest building: early May. Egg laying to fledge: May-July. |
| Henslow's Sparrow ^k | Grasslands with tall, dense herbaceous vegetation and thick litter layer. | Ground nest. Placed among thick litter about 6-8 cm off ground. | Nest building: late April. Egg laying to fledge: May thru August. |
| Kentucky Warbler ^l | Bottomland hardwoods and woods near streams with dense understory, often at low elevations. Well-developed ground cover and a thick understory are essential. | Ground nesting. Base of nest rests on ground, often anchored in sturdy herbaceous vegetation. | Nest building: May. Egg laying to fledge: mid-May to June/July. |
| Least Bittern ^m | Freshwater and brackish marshes with dense, tall growths of aquatic or semiaquatic vegetation interspersed with clumps of woody vegetation and open water. | Typically built among dense, tall stands of emergent or woody vegetation. Nests usually 15-76 cm above open water. | Nest building: May. Egg laying to fledge: late May to late June-July. |
| Louisiana Waterthrush ⁿ | Forest habitat. Breeds along medium to high-gradient, first to third-order, gravel-bottomed streams flowing through closed-canopy, hilly, deciduous or mixed forests. | Ground nest. Nests along streams within forested areas. Nests are placed on or near the ground in small hollows or cavities within root base of upturned tree, within crevices or roots of a steep stream bank, under a fallen log, or beneath fronds of overhanging vegetation. | Nest building: mid April-late April. Egg laying to fledge: mid April-late June. |
| Northern Saw-whet Owl ^o | Variety of forest types, from deciduous to conifer to mixed. | Cavity nest. Secondary-cavity nester. Trees or nest boxes if available. | Nest Building: March. Egg laying to fledge: Late March – June. |
| Peregrine Falcon ^p | Widely varies, none seem to be preferred. Winters Only. | Winters only. | Winters only. |
| Pied-billed Grebe ^q | Lakes/Ponds. Bodies of flat or sluggish, fresh to slightly brackish water; including freshwater wetlands, wet fields, bays, sloughs, marshes, lakes, slow-moving rivers. | Floating nest typically situated among tall emergent vegetation; sometimes nesting among lower-growing plants. Favor locations with water deeper than 0.22 m (~9 inches). | Nest building: Apr-early May. Egg laying to fledgling: late Apr-May to Jun-Aug |

| Common Name | Breeding Habitat | Nest Location | Nesting Period ^a |
|------------------------------------|--|--|---|
| Prairie Warbler ^t | Forest (early-successional) and shrub habitats. Shrubby habitats, including early-stage regenerating forests, open fields, and forests or tree communities with a sparse/open upper canopy layer and dense shrubby understory. | Sapling trees and tall shrubs. Prefer to nest along edges of tree patches or forests, or within clumps of early successional trees. Nests in shrubs and sapling trees, and nest sites are generally > 1 and < 3 m from ground. | Nest building: late April-mid-May. Egg laying to fledge: early May-late June. |
| Prothonotary Warbler ^s | Wet forests, primarily bottomland hardwood forests and other forested wetlands. Key habitat features are presence of water near wooded areas with suitable cavity nest sites. | Cavity nester. Typically use woodpecker holes or other natural cavity in dead snag or branch of live tree. Readily uses nest boxes or other artificial structures. | Nest building: early to mid-May. Egg laying to fledge: mid-May to July |
| Purple Sandpiper ^t | Winters only. Rocky shorelines and less commonly mudflats or sandy shores. | Winters only. | Winters only. |
| Red Knot ^u | Winters only. Typically sandy beaches. | Winters only. | Winters only. |
| Red-headed Woodpecker ^v | Commonly found in deciduous woodlands, especially with beech or oak, lowland and upland habitats, river bottoms, open woods, groves of dead or dying trees, orchards, parks, open agricultural country, savanna-like grasslands with scattered trees, and forest edge and along roadsides. | Cavity nester. Nests in dead trees or in dead portions of live trees, e.g., well-weathered dead pines, pine stubs, maple, birch, cottonwood, oak, and in utility poles, often in open areas with little ground vegetation. | Nest building: early-May. Egg laying to fledge: late-May to July/August. |
| Rusty Blackbird ^w | Does not breed in PA, winters only. Winter habitat consists of swamps, wet woodlands, and pond edges. | In living and dead trees, shrubs, and atop stumps. Almost always near water. Uses spruce, fir, tamarack, willow, birch, alder, and other species, depending on location. | Does not breed in PA. Winters only. |
| Saltmarsh Sparrow ^x | Freshwater marshes and meadows. | Typically placed within grass column with sides supported by vegetation. | Nest building: May/June. Egg laying to fledge: May – August. |
| Short-eared Owl ^y | Open country. Marshes, grasslands, tundra, and agricultural areas. Typically does not breed in New York or Pennsylvania, winters only. | Ground nester. Typically dry sites, often on small knolls, ridges, or hummocks. Nest bowls scraped out by female and lined with grasses and downy feathers. | Does not breed in PA |
| Snowy Egret ^z | Freshwater sites include marshes, swamps, and flooded fields. | Tree nest or herbaceous vegetation strong enough to support nest. Typically within marsh or swamp. | Nest building: April. Egg laying to fledging: mid-May to July/August. |

| Common Name | Breeding Habitat | Nest Location | Nesting Period ^a |
|--|---|--|--|
| Upland Sandpiper ^{aa} | Dry grasslands with low to moderate forb cover, low woody cover, moderate grass cover, moderate to high litter cover, and little bare ground. | Ground nest in clump of herbaceous vegetation. | Nest building: Mid to late April. Egg laying to fledge: May through June. |
| Wood Thrush ^{ab} | Forest habitat. Interior and edges of deciduous and mixed forests, generally in cool, moist sites, often near water; requires moderate to dense understory and shrub density with a lot of shade. Key elements of preferred sites include trees >16 m in height, high variety of deciduous tree species, moderate subcanopy and shrub density, shade, fairly open forest floor, moist soil, and decaying leaf litter. | Sapling trees and tall shrubs. Nest in dense vegetation within forests, but also know to use forest edges. Uses saplings-sized trees and tall shrubs, and both deciduous and conifer species, for nest sites. Nests usually located < 6 m above ground (avg. height 2.3 m). | Nest building: early May-mid-May. Egg laying to fledge: mid May-mid June. |
| Worm-eating Warbler ^{ac} | Forest habitat. Areas where large areas of mature deciduous or mixed deciduous-coniferous forest overlap with steep hillsides patches of dense understory shrubs. Preferred habitats include forest tracts > 21 hectares, moderate to steep slopes, and dense understory of laurels and rhododendrons. | Ground nest. Nests placed on the ground in mature forest on the hillside or bank of a ravine, and often in proximity to streams and wetlands. Nests are usually located at the base of sapling trees, next to shrub/tree roots, next to rock ledges and outcroppings, or within patches of huckleberry or blueberry. | Nest building: late April-mid May. Egg laying to fledge: early May-mid July. |
| Yellow-bellied Sapsucker ^{ad} | Early-successional forests with quaking aspen or birch, also mixed-conifer forest. Typically along riparian zones. | Cavity nest. No nest or lining within cavity. | Nest building: April/May. Egg laying to fledge: April/May to July. |

Table 1 Notes/Sources:

- ^a Likely times for Pennsylvania. However, the timing of the breeding/nesting season is highly dependent upon spring weather conditions and can vary by up to 3 weeks. In addition, species are known to produce two broods per season if the initial brood is lost, extending dates beyond those presented here.
- ^b Lowther et al. 2009,^c Buehler, D.A. 2000, ^d Hughes, J.M. 2001, ^e Foote et al. 2010, ^f Gill et al. 2001, ^g Reitsma et al. 2010, ^h Buehler et al. 2013, ⁱ Weckstein et al. 2002, ^j Confer et al. 2011, ^k Herkert et al. 2002, ^l McDonald, M.V. 2013, ^m Poole et al. 2009, ⁿ Mattsson et al. 2009, ^o Rasmussen et al. 2008, ^p White et al. 2002, ^q Muller and Storer. 1999, ^r Nolan et al. 1999, ^s Petit. 1999, ^t Payne and Pierce. 2002, ^u Baker et al. 2013, ^v Smith et al. 2000, ^w Avery, M.L. 2013, ^x Greenlaw and Rising. 1994, ^y Wiggins et al. 2006, ^z Parsons and Master. 2000, ^{aa} Houston et al. 2011, ^{ab} Evans et al. 2011, ^{ac} Hanners and Patton. 1998, ^{ad} Walters et al. 2002.

3.4 IMPORTANT BIRD AREAS

Important Bird Areas, or IBAs, are sites that provide essential habitat for one or more species of bird. IBAs include sites for breeding, wintering, and/or migrating birds. IBAs may be a few acres or thousands of acres, but usually they are discrete sites that stand out from the surrounding landscape. IBAs may include public or private lands, or both, and they may be protected or unprotected. To qualify as an Important Bird Area, sites must satisfy at least one of the following criteria. The site must support:

- Species of conservation concern (e.g. threatened and endangered species)
- Restricted-ranges species (species vulnerable because they are not widely distributed)
- Species that are vulnerable because their populations are concentrated in one general habitat type or biome
- Species, or groups of similar species (such as waterfowl or shorebirds), that are vulnerable because they occur at high densities due to their congregatory behavior

Desktop review of the Audubon’s IBAs of Pennsylvania indicated that the Project would pass through portions of the Allegheny Front, Greater Tussey Mountain, Tuscarora Ridge / The Pulpit, Kittatinny Ridge, Middle Creek Wildlife Management Area, Hay Creek / French Creek Forest Block, and the Upper Ridley / Crum IBAs (National Audubon Society 2013) (Table 2). A portion of the Project is also located approximately 0.10 miles from the Great Marsh IBA.

Table 2. National Audubon’s Important Bird Areas Traversed by the Project.

| IBA | County Crossed | Mileage |
|---------------------------------------|-----------------------|----------------|
| Allegheny Front | Cambria, Blair | 9.6 |
| Tussey Mountain | Blair, Huntingdon | 1.7 |
| Tuscarora Ridge & The Pulpit | Juniata, Perry | 1.8 |
| Hawk Mountain & Kittatinny Ridge | Perry, Cumberland | 8.4 |
| Middle Creek Wildlife Management Area | Lebanon, Lancaster | 2.5 |
| Hay Creek / French Creek Forest Block | Berks | 3.4 |
| Upper Ridley-Crum Creek | Chester | 3.0 |

4.0 IMPACT ASSESSMENT

The MBTA prohibits the taking of migratory birds, their eggs, parts, and nests. There is potential risk for direct mortality to and/or destruction of migratory birds, nests, eggs, and young (i.e., “take”) as a result of construction activities such as vegetation clearing and grading in the ROW. While not unlawful under the MBTA, the temporary or permanent loss or alteration of suitable nesting habitats (as a result of permanently restricting vegetation growth in the ROW to herbaceous or shrub habitats) could result in displacement or relocation of certain species or individuals that nest in the current vegetation of the proposed workspace areas. This in turn could change the density and diversity of birds in the Project areas. A baseline list of migratory species and their nest habitat requirements are presented in Appendix B, those identified as BCC species are identified in Table 1, and the results of agency consultation on sensitive species and habitats are provided in Section 4.3.

4.1 POTENTIAL IMPACTS

Collectively, out of the 159 migratory species noted in Appendix B, 29 species are USFWS BCC species. Seventeen of these BCC species are closely associated with forested habitats, eight are associated with open habitats, three are associated with aquatic habitats, and one is associated with shrubland habitats (Table 1). Several of these BCC species also use more than one habitat type and all of these habitat types.

In the absence of implementing impact avoidance minimization measures, direct effects on migratory birds due to construction activities could include destruction of nests and eggs, mortality of young, and loss of habitat. Indirect effects of construction include reduced nest success due to reduced nest attendance and foraging time for adults, as a result of noise and construction activity near nests potentially causing fleeing behavior. This also could result in increased vulnerability to predators. Cumulative effects (i.e., this Project, combined with other projects that may be ongoing, planned, or recently completed in the Project vicinity) could include habitat alteration on a landscape scale that could potentially affect local bird populations.

Operation of the pipeline requires regular maintenance mowing of the permanent ROW to maintain visual inspection requirements established by the Department of Transportation. Operational mowing could include the same potential impacts associated with construction, but would be limited to already maintained areas and those species adapted for nesting within these areas. However, much of the ROW is maintained in an herbaceous state and not allowed to reach vegetation heights and density that is conducive to supporting nests.

4.2 POTENTIAL IMPACTS BY HABITAT TYPE

Forest Areas

Forest habitat consists of mature, mid-successional, and young forest age-classes. Most of the upland forest habitat is dominated by deciduous species, but conifer dominated and mixed deciduous/conifer communities also occur. Twelve of the 29 BCC species are known to breed and/or nest in forest habitat (Table 1).

Loss of tree and shrub habitat, reduction in size of large forest tracts, and increased fragmentation/forest edge are among the greatest risks for impacts to individuals and local populations of forest breeding birds. Potential impacts to forest nesting birds include loss of tree and shrub nests, eggs, or young as a result of tree felling; loss of ground nests, eggs, or young as a result of construction equipment; displacement from foraging areas; and noise disturbance.

Shrub Areas

Shrub habitats include previously disturbed areas that are in the early stages of succession and composed of a diversity of shrub and herbaceous plant species. Depending on the time since the last disturbance, shrub habitats may also contain young trees. Of the 29 BCC species, the black-billed cuckoo, blue-winged warbler, golden-winged warbler, and prairie warbler are known to use shrub habitats during breeding and/or nesting (Table 1).

Potential impacts to birds occupying this habitat type are similar for those discussed previously and include loss of shrub nests, eggs, or young as a result of shrub removal; loss of ground nests, eggs, or young as a result of construction equipment; displacement from foraging areas; and noise disturbance. Other impacts include a temporary loss of available nesting habitat. However, shrub regeneration in temporary workspaces would occur relatively quickly following construction (e.g., within a few growing seasons).

Aquatic Areas

Aquatic areas include wetlands and waterbodies. Upon completion of construction aquatic resources areas will be restored and allowed to revert to pre-construction conditions. Habitat conditions will generally regenerate within a few growing seasons. The extent of permanent impacts to this habitat type is unknown at this point.

Aquatic areas provide breeding and foraging habitat for a variety of BBC species listed in Table 1 and in Appendix B. The BCC species Louisiana waterthrush require forest habitats directly bordering second to third order streams for breeding. Other BCC species may breed in forested wetland areas, but are more closely associated with upland forest areas.

Potential impacts on species dependent upon wetland habitats include loss of nests, eggs, or young; displacement from nesting and foraging areas; noise disturbance; and loss of some habitat (e.g., shrubs, emergent vegetation).

Open Areas

Open areas include meadows, old (fallow) fields, and emergent wetlands. In this open habitat, vegetative structure remains primarily in herbaceous cover, but depending on the time since the last disturbance, these open habitats may also contain scattered shrubs and young trees.

Open areas are used by seven BCC species. American bittern, black tern, least bittern, and pied-billed grebe all use aquatic habitats that fall into the open area land use category. The Henslow's sparrow uses open upland grassland areas for breeding and wintering areas. Open areas with suitable amounts of shrubs and trees are also used as nesting habitat by blue-winged warbler and

prairie warbler (Table 1). However, blue-winged warbler and prairie warbler are also known to use shrub habitats for nesting, and more typically are associated with early-successional forest areas.

Should grassland birds occupy open habitats of the Project area, the potential impacts to them include loss of nests, eggs, or young as a result of construction disturbances or equipment; displacement from foraging areas; and noise disturbance.

Agricultural Areas

Agricultural lands include farmed crop fields, hay fields, pasture, orchards, and vineyards. Depending on the timing of harvesting operations agricultural fields can support grassland-nesting species (Appendix B). The short-eared owl is known to use agricultural areas for wintering (Table 1).

Developed Areas

Developed areas consist of lands associated with buildings, roads, graveled areas, and other surface treatments that generally cover and convert vegetated areas to hard structures/surfaces. In general, developed areas provide limited habitat for many bird species except those adapted to roost, forage, or nest near urban and suburban environments. None of the BCC use developed areas as primary breeding or foraging areas. However, several of the other 159 MBTA protected species can be found in developed areas (Appendix B).

This habitat supports bird species already adapted to breeding and foraging in close proximity to human activities and disturbance, and therefore potential impacts to foraging or nesting behavior due to noise and disturbance is expected to be very minimal. Species that nest in buildings, such as the barn swallow and eastern screech owl, are also at low risk for interruption of breeding activity since Project construction activities will not affect structures other than existing aboveground facilities which generally do not present suitable habitat for these species. Overall, impacts to species in disturbed habitats are expected to be minor and associated with temporary displacement from foraging areas within the construction workspaces. Some potential impact to ground-nesting species exists, but is expected to be minimal because existing activities in developed areas would already preclude many viable nests. If tree or shrub clearing occurs in developed areas, some nests, eggs, or young could be lost (if present).

Noise Impacts

The majority of noise impacts will be temporary during the construction process. These noise impacts will end once construction is complete. Modifications to existing facilities will not result in any noise increases above what is already produced at the various sites.

4.3 SENSITIVE SPECIES

SPLP has coordinated with Federal and state wildlife agencies regarding impacts to sensitive, rare, threatened, and endangered species. The USFWS has not indicated within their ESA correspondence regarding this Project any concerns for any federally listed candidate, threatened, or endangered bird species. The USFWS final determination on the Project is provided in Appendix D.

The Pennsylvania Game Commission (PGC), who has jurisdiction over bird species, upon their review of the Project indicated the northern harrier as the only bird species of concern. However, after the provision of additional Project data, the PGC concluded in its June 8, 2016 letter that impacts to northern harrier is not likely (Appendix D). Although some state listed species are discussed in Section 3.3 and presented in Table 1, those species are based on more general database searches and habitat associations.

Similar to all MBTA species, impacts to the BBC species listed in Table 1 will be primarily avoided through the clearing of vegetation between September 1 and March 31. In addition, BBC species will also benefit greatly from the measures to reduce habitat impacts already incorporated into the current design of the PPP.

Conservation measures implemented to protect the federally ESA listed Indiana bat, northern long-eared bat, bog turtle, and northeastern bulrush also benefit migratory birds. Seasonal tree clearing restrictions are required for the two bat species, and wetlands have been rerouted around and/or design changes implemented to protect the bog turtle and the northeastern bulrush.

5.0 MIGRATORY BIRD HABITAT CONSERVATION PLAN

From the on-set of the Project, SPLP has taken a land-stewardship approach to planning and designing the PPP. SPLP provided specific instruction to its engineers to co-locate the alignment of the pipeline with existing SPLP owned and operated ROWs to the maximum extent practicable and overlap workspaces wherever possible. When co-location with existing SPLP ROWs was not possible, engineers were instructed to seek other utility corridors to parallel. Over 80 percent of the Project is co-located with existing utility line ROWs. In addition, SPLP provided strict instruction to designers to limit the permanent ROW to 50 feet and utilize a construction workspace of only 75-foot-wide. Further providing instruction to limit the construction workspace through wetlands and streams to the 50-foot-wide permanent ROW. These construction widths are the absolute minimum necessary to safely install pipeline of these diameters. SPLP is also implementing extensive use of Horizontal Directional Drill (HDD) technology to further reduce impacts to sensitive resources such as sensitive species occupied habitats and forested and scrub-shrub wetlands. Habitats between the majority of exit and entry points of the 132 drill locations will remain undisturbed throughout the construction and operation of the Project.

SPLP has taken measures to avoid and minimize permanent impacts to all wildlife habitats and has minimized the Project limits of disturbance footprint the minimum practicable while allowing safe installation and operation of the pipelines. Although the impacts to migratory birds discussed in Section 4.1 are potential, SPLP has thoroughly avoided and minimized the potential to insignificant levels through its understanding of the impacts to these resources prior to and during the design phase. Due to the Project's design being the least environmentally damaging practicable alternative and the linear nature of the Project, the impacts to the variety of habitats used by migratory birds would be wide-spread and not result in significant reductions of available habitats.

To further ensure potential impacts to migratory birds are avoided and realized by this Project, SPLP has and will continue to implement Best Management Practices (BMPs) and general recommendations of the USFWS Pennsylvania Field Office's general guidance document (Appendix C) as discussed in Section 5.2 whenever practicable. As a result, potential impacts on migratory birds, and most importantly BCCs, will be reduced and minimized.

5.1 SENSITIVE SPECIES

SPLP has coordinated with Federal and state wildlife agencies regarding impacts to sensitive, rare, threatened, and endangered species. The USFWS has not indicated within their ESA correspondence regarding this Project any concerns for any federally listed candidate, threatened, or endangered bird species. The USFWS final determination on the Project is provided in Appendix D.

The Pennsylvania Game Commission (PGC), who has jurisdiction over bird species, upon their review of the Project indicated the northern harrier as the only bird species of concern. However, after the provision of additional Project data, the PGC concluded in its June 8, 2016 letter that impacts to northern harrier is not likely (Appendix D). Although some state listed species are discussed in Section 3.3 and presented in Table 1, those species are based on more general database searches and habitat associations.

Similar to all MBTA species, impacts to the BBC species listed in Table 1 will be primarily avoided through the clearing of vegetation for construction between September 1 and March 31. In addition, BBC species will also benefit greatly from the measures to reduce habitat impacts already incorporated into the current design of the PPP.

Conservation measures implemented to protect the federally ESA listed Indiana bat, northern long-eared bat, bog turtle, and northeastern bulrush also indirectly benefit migratory birds. Seasonal tree clearing restrictions are required for the two bat species, and wetlands have been rerouted around and/or design changes implemented to protect the bog turtle and the northeastern bulrush.

5.2 PRACTICES FOR CONSERVING MIGRATORY BIRDS

SPLP's Project plans principally adhere to all five of the general recommendations in USFWS's Adaptive Management Practices for Conserving Migratory Birds.

USFWS Recommendation #1 is to restrict clearing of natural or semi-natural habitats (e.g., forests, woodlots, reverting fields, fencerows, shrubby areas) to the period of September 1 to March 31, which is outside the nesting period for most migratory birds.

SPLP has already cleared approximately 53 miles of natural and semi-natural habitats of the Project and that was accomplished during the winter of 2015/2016 between September 1, 2015 and March 31, 2016. The current Project schedule also has the remaining clearing being completed between September 1, 2016 and March 31, 2017. In addition, the first 51 miles of the Project in Washington, Allegheny, and Westmoreland counties will involve very limited clearing as almost all workspaces have been sighted in those recently used for installation of SPLPs 12-inch Houston to Delmont Project.

USFWS Recommendation #2 includes avoiding permanent habitat alterations in areas where birds are highly concentrated.

Desktop review of the Audubon's IBAs of Pennsylvania indicated that the Project would pass through portions of the Allegheny Front, Greater Tussey Mountain, Tuscarora Ridge / The Pulpit, Kittatinny Ridge, Middle Creek Wildlife Management Area, Hay Creek / French Creek Forest Block, and the Upper Ridley / Crum Important Bird Areas (IBAs) (National Audubon Society 2013) (Table 2). A portion of the Project is also located approximately 0.10 miles from the Great Marsh Important Bird Area. The sections that pass through these IBAs are all co-located within or adjacent to existing permanent ROW to minimize permanent habitat alterations to the maximum extent practicable. Large reroutes at Marsh Creek State Park and at Middle Creek Wildlife Management Area have also minimized the permanent habitat alterations at these areas. The other IBAs are very large and span several counties limiting alternatives primarily to the reduction of overall workspaces and design alternatives.

None of the pump stations requiring permanent land disturbances are sited in IBAs. All temporary workspaces through these areas will be restored and allowed to revegetate to the previous condition. In many cases, where special land uses are crossed such as the Tuscarora State Forest, specific reforestation or plantings are required. These special conditions ensure that temporary

impacts are of the shortest duration practicable. The permanent ROW where currently vegetated will be also returned to a vegetated state and no extra impervious surfaces are proposed for the pipeline facilities. During construction all of the IBAs have been or are anticipated to be cleared of vegetation between September 1 and March 31 to further protect migratory birds. Whenever practicable and not precluded by operational needs, maintenance mowing of the ROW during operation of the pipeline within the IBA areas would only be mowed as the need arises and this is expected to result in some years where no mowing will occur. Special low maintenance seed mixes, such as birds foot-trefoil, will be considered within the IBAs to further limit the need for annual mowing. Biologists will discuss conservation opportunities for migratory birds, specifically IBA areas, with SPLP Operations for consideration within their ROW maintenance plan.

Wetlands and waters ways also concentrate birds and often harbor many sensitive species due to limited habitat availability. SPLP has reduced its construction ROW to 50 feet-wide when crossing streams and wetlands and has almost eliminated all temporary/extra workspaces in these areas. In addition, the reductions of the construction width occur 10-feet on either side of the wetland or stream offering further protection to important upland stream bank and wetland edge buffers. Palustrine forested (PFO) habitats are often limited in availability and are some of the more sensitive wetland resources of the Commonwealth. SPLP has almost eliminated the permanent and temporary conversion of this type of wetland to permanent maintained ROW. A total of 0.693 acre of initial PFO conversion across 19 wetlands will result with implementation of the Project. Of which 0.288 acre will be restored to the PFO habitat type. The remaining permanent conversion will be compensated for through off-site mitigation. In addition, palustrine scrub shrub (PSS) habitats offer nesting and brood rearing opportunities. The initial impact to this habitat type to maintained permanent ROW has also been minimized to 1.025 acres and all of these areas will be restored to the PSS condition following construction.

***USFWS Recommendation #3** includes avoiding fragmentation of large, contiguous tracts of wildlife habitat, maintaining contiguous habitat corridors to facilitate wildlife dispersal, and locating projects on lands already altered, cultivated, or degraded.*

See comments for Recommendation # 4.

***USFWS Recommendation #4** is similar to #3, and includes measures to reduce habitat fragmentation by co-locating infrastructure in or immediately adjacent to already disturbed areas.*

SPLP minimized land and vegetation disturbance by co-locating the proposed (new) facilities of the Project within and adjacent to previously cleared, existing permanent ROW areas to the maximum extent practicable. Over 80 percent of the new ROW will be co-located adjacent to existing utility corridors, including approximately 230 miles of pipeline that will be co-located in the existing SPLP Mariner East pipeline system; therefore impacts will be limited to the new 50-foot wide ROW expansion area located adjacent to and overlapping with existing ROW. Additionally, all temporary workspaces will be restored and allowed to revert back to pre-construction conditions. Finally, SPLP's construction procedures strictly require that all construction will be restricted to the limits of the approved workspace, which will protect and avoid damage to vegetation outside the intended workspace. The Project will be staffed with Environmental Inspectors (EIs) that will ensure workspace limitations are adhered to.

USFWS Recommendation #5 includes avoiding or minimizing negative impacts on vulnerable wildlife, developing a habitat restoration plan, and using only plant species that are native to the local area for revegetation of the Project.

SPLP will minimize impacts in sensitive resource areas such as wetlands and waterbodies. Strict procedures will be followed for constructing through wetland habitats. Measures include: leaving wetland vegetation root stock in place, using protective matting to minimize surface impacts, segregating topsoil from subsoil over the trench line (in non-saturated wetlands) during construction, restoring topsoil (containing wetland plant rhizomes and seed) on top following pipeline installation, and using erosion and sediment control devices to minimize site erosion and sedimentation. Wetland areas will be stabilized immediately following construction activities, contours will be restored, and the wetland will be allowed to revert to native vegetative cover. Stream crossings will be completed as quickly as possible, stream banks and bottom will be restored and stabilized, and SPLP will use construction BMP to minimize sedimentation, turbidity, and other impacts that may temporarily affect stream habitats and wildlife. Many of these BMPs will also be implemented within upland areas as well, such as segregation and restoration of topsoil.

All areas will be revegetated using PADEP approved plantings and plans that avoid the use of non-native species and encourage establishment of species that provide erosion control while not jeopardizing adjacent areas with the introduction of non-native/invasive species. In addition, specific areas such as state forests, game lands, and USACE properties all have site-specific planting plans that call for rapid restoration of all disturbed areas and in many areas accelerated reforestation of temporary workspaces. These plans call-out specific species to be used and also call for invasive species BMPs to be followed along with post-construction monitoring. The Project's USACE Section 404 permits are expected to be conditioned in regards to invasive species monitoring at restored wetlands. At the crossing of several areas on USACE owned properties, the permanent ROW will be planted with pollinator seed mixes designed to benefit a variety of fauna. All of these general and site-specific special conditions are designed to avoid and minimize impacts on the native flora and fauna. Details of any special planting plans can be requested at any time once finalized with the cooperating agencies.

6.0 SUMMARY

SPLP has taken measures to avoid and minimize permanent impacts to all wildlife habitats and has minimized the Project limits of disturbance footprint the maximum practicable while allowing safe installation and operation of the pipelines. Although the impacts to migratory birds discussed in Section 4.1 are potential, SPLP has thoroughly avoided and minimized the potential to insignificant levels through its understanding of the potential impacts to migratory birds and their habitats prior to, and during, the design phase. Biologists will discuss conservation opportunities for migratory birds, specifically IBA areas, with SPLP Operations for consideration within their ROW maintenance plan. Due to the Project's design being the least environmentally damaging practicable alternative and the linear nature of the Project, the impacts to the variety of habitats used by migratory birds would be wide-spread and not result in significant reductions of available habitats. SPLP's Project planning has and will continue to principally adhere to all five of the general recommendations in the USFWS Pennsylvania Field Office's Adaptive Management for

Conserving Migratory Birds (Appendix C). This plan is considered to be adaptive and if the Project schedule changes, potential impacts will be re-evaluated, with appropriate additional conservation measures implemented.

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APPENDIX A
PROJECT LOCATION MAP

APPENDIX B

BASELINE MIGRATORY BIRD TREATY ACT SPECIES

Appendix B. Baseline Migratory Bird Treaty Act Species and Birds of Conservation Concern^a

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|--------------------------------------|---------------------|------------------------------|---|---|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| Geese and Ducks (Order Anseriformes) | Canada Goose | <i>Branta canadensis</i> | marsh, grassy fields, grain fields, lawns | ground near water | X | | | X | X | X |
| | Wood Duck | <i>Aix sponsa</i> | lake, pond, marsh, streams, bottomland forests | tree cavity near or over water | | | | | X | |
| | Mallard | <i>Anas platyrhynchos</i> | wetlands | ground | | | | | X | |
| | American Black Duck | <i>Anas rubripes</i> | freshwater wetlands, lakes, and ponds. | ground | X | X | X | | X | |
| | Hooded Merganser | <i>Lophodytes cucullatus</i> | forested wetlands | tree cavity or nest box | | | | | X | |
| | Common Merganser | <i>Mergus merganser</i> | lakes and rivers in forested habitats | Tree cavity or nest box | | X | | X | X | |
| Grebes (Order Podicipediformes) | Pied-billed Grebe | <i>Podilymbus podiceps</i> | ponds with dense vegetation | floating vegetation; nest is an open bowl | | | | | X | |
| Wading Birds (Order Ciconiiformes) | Great Blue Heron | <i>Ardea herodias</i> | calm freshwater marsh | trees near water; colonial | | X | | | X | |
| | American Bittern | <i>Botaurus lentiginosus</i> | freshwater wetlands with tall, emergent vegetation | emergent vegetation | | | | | X | |
| | Least Bittern | <i>Ixobrychus exilis</i> | Freshwater and brackish marshes with dense, tall emergent vegetation and open water | emergent or woody vegetation | | | | | X | |
| | Green Heron | <i>Butorides virescens</i> | swamps, creeks and streams, in marshes, ponds, lake edges | trees or shrubs usually over | | | | | X | |
| Taxonomic Group | Common | Scientific Name | General Breeding | Nest | Nest Location Habitat Category^b | | | | | |

| | Name | | Habitat (Nesting and Foraging) | Location | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
|-------------------------------|---------------------------|---------------------------------|--|--|-------------|--------|-------|------|----------------------|-----------|
| | Snowy Egret | <i>Egretta thula</i> | marshes and other wetland areas | trees | | X | | X | X | |
| | Black-crowned Night-Heron | <i>Nycticorax nycticorax</i> | variable – fresh, brackish, and saltwater wetland areas | trees | | X | | | X | |
| Rails (Order Gruiformes) | Common Gallinule | <i>Gallinula galeata</i> | Freshwater or brackish marshes | floating | | | | X | X | |
| | American Coot | <i>Fulica americana</i> | Lakes and ponds | floating | | | | X | X | |
| | King Rail | <i>Rallus elegans</i> | Freshwater marshes | ground | | | | X | X | |
| | Virginia Rail | <i>Rallus limicola</i> | Freshwater marshes. Dense emergent vegetation | ground | | | | | X | |
| | Sora | <i>Porzana carolina</i> | freshwater marshes dominated by emergent vegetation | emergent vegetation | | | | | X | |
| Cormorants (Order Suliformes) | Double-crested Cormorant | <i>Phalacrocorax auritus</i> | seacoasts and inland waters | ground and trees | | X | X | X | X | X |
| Raptors (Order Falconiformes) | Bald Eagle | <i>Haliaeetus leucocephalus</i> | forested areas adjacent to large bodies of water. | nests in trees. Ground nests in treeless areas | | X | | X | | |
| | Sharp-shinned Hawk | <i>Accipiter striatus</i> | forests, usually with conifers; large stands of deciduous, coniferous, and mixed pine-hardwood forests and pine plantations. | trees | | X | | | | |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|-------------------------------|---------------------|---------------------------|---|---|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| Raptors (Order Falconiformes) | Cooper's Hawk | <i>Accipiter cooperii</i> | Forests and woodlands; often in parks, suburbs, neighborhoods | trees; often on flat ground rather than hillsides, and in dense woods | | X | | | | |
| | Osprey | <i>Pandion haliaetus</i> | areas near open water | tree | | | | X | X | |
| | Red-shouldered Hawk | <i>Buteo lineatus</i> | Forests with open understory, especially bottomland hardwoods, riparian areas, and flooded swamps | trees | | X | | | X | |
| | Broad-winged Hawk | <i>Buteo platypterus</i> | continuous deciduous or mixed-deciduous forest | trees | | X | | | | |
| | Red-tailed Hawk | <i>Buteo jamaicensis</i> | any open habitat including scrublands, grasslands, roadsides, fields and pastures, parks, broken woodland | trees | | X | | | | |
| | Turkey Vulture | <i>Cathartes aura</i> | open areas near forests | cavities or ground | | X | X | X | | |
| | Northern Harrier | <i>Circus cyaneus</i> | upland grasslands and fresh and saltwater marshes | ground | | | | X | X | |
| | Peregrine Falcon | <i>Falco peregrinus</i> | open areas with cliff or tall buildings | cliffs or buildings | | | | X | | X |
| | American Kestrel | <i>Falco sparverius</i> | open habitats, including meadows, grasslands, parkland, agricultural fields, urban and suburban areas | tree cavities, nest boxes | X | | | X | | X |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|--|-------------------|-----------------------------|--|--------------------|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| Shorebirds (Order Charadriformes) | Spotted Sandpiper | <i>Actitis macularius</i> | nearly all habitats near water | ground | | | | X | X | |
| | Upland Sandpiper | <i>Bartramia longicauda</i> | upland grasslands | ground | | | | X | | |
| | Killdeer | <i>Charadrius vociferus</i> | open areas near water or in dry uplands | ground | X | | | X | X | X |
| | Red Knot | <i>Calidris canutus</i> | Breeds in tundra, otherwise found in marine habitats | ground | | | | X | X | |
| | Purple Sandpiper | <i>Calidris maritima</i> | Breeds in tundra, winters along rocky shorelines | ground | | | | X | X | |
| | American Woodcock | <i>Scolopax minor</i> | forests with openings, shrubby areas | ground | | X | | | | |
| Pigeons and Doves (Order Columbiformes) | Mourning Dove | <i>Zenaida macroura</i> | open country, scattered trees, and woodland edges; Feed on ground in grasslands, agricultural fields, backyards, and roadsides | trees or on ground | X | X | X | X | | X |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|------------------------------------|---------------------------|----------------------------------|---|-----------------------|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| Cuckoos (Order Cuculiformes) | Yellow-billed Cuckoo | <i>Coccyzus americanus</i> | Open woodlands with clearing and low, dense, scrubby vegetation. | trees | | X | X | | | |
| | Black-billed Cuckoo | <i>Coccyzus erythrophthalmus</i> | forests; tend to occur in more extensive tracts of woods; prefer deciduous | trees or shrubs | | X | | | | |
| Owls (Order Strigiformes) | Short-eared Owl | <i>Asio flammeus</i> | Open areas; grasslands, agricultural areas, prairies, etc. | ground | | | | X | | |
| | Long-eared Owl | <i>Asio otus</i> | Forests and open grasslands/shrublands | tree | | X | X | X | | |
| | Northern Saw-whet Owl | <i>Aegolius acadicus</i> | Forested habitats with high densities of conifers | tree cavities | | X | | | | |
| | Eastern Screech Owl | <i>Megascops asio</i> | most habitats with trees, including urban and suburban areas | trees, buildings | | X | | | | X |
| | Great Horned Owl | <i>Bubo virginianus</i> | open and secondary-growth woodlands and agricultural areas | trees, cliffs, ground | X | X | | | | |
| | Barred Owl | <i>Strix varia</i> | Forest | trees (deciduous) | | X | | | | |
| Swifts (Order Apodiformes) | Chimney Swift | <i>Chaetura pelagica</i> | open area and urban areas | building | | | | X | | X |
| Hummingbirds (Order Apodiformes) | Ruby-throated Hummingbird | <i>Archilochus colubris</i> | deciduous woodlands, old fields, forest edges, meadows, orchards, stream borders, and backyards | trees | | X | | | X | X |
| Nightjars (Order Caprimulgiformes) | Common Nighthawk | <i>Chordeiles minor</i> | rural and urban open areas | ground | | | | X | | X |
| | Eastern Whip-poor-will | <i>Antrostomus vociferus</i> | open woodlands | ground | | X | X | X | | |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|--------------------------------------|--------------------------|-----------------------------------|--|------------------------------------|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| Kingfishers (Order Coraciiformes) | Belted Kingfisher | <i>Megaceryle alcyon</i> | streams, rivers, lakes, and estuaries | burrow in bank near water | | | | | X | |
| Woodpeckers (Order Piciformes) | Yellow-bellied Sapsucker | <i>Sphyrapicus varius</i> | young forests and along streams, especially in aspen and birch | tree cavities | | X | | | X | |
| | Red-bellied Woodpecker | <i>Melanerpes carolinus</i> | forests, woodlands, and wooded suburbs | tree cavities | | X | | | | |
| | Red-headed Woodpecker | <i>Melanerpes erythrocephalus</i> | Deciduous woodlands, especially with beech or oak | tree cavities | | X | | | | X |
| | Downy Woodpecker | <i>Picoides pubescens</i> | open woodlands, particularly deciduous woods and along streams; also open areas | tree cavities; dead or partly dead | | X | | | X | |
| | Hairy Woodpecker | <i>Picoides villosus</i> | mature woodlands with medium to large tree; also woodlots, suburbs, parks, and cemeteries | tree cavities; dead or partly dead | | X | | | | X |
| | Northern Flicker | <i>Colaptes auratus</i> | woodlands, forest edges, open fields with scattered trees, as well as city parks and suburbs | tree cavities; dead or partly dead | | X | | | | X |
| | Pileated Woodpecker | <i>Dryocopus pileatus</i> | deciduous or coniferous forests with large trees | tree cavities; dead or partly dead | | X | | | | |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|--|--------------------------|----------------------------|--|---------------|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| Tyrant Flycatchers (Order Passeriformes) | Eastern Wood-Pewee | <i>Contopus virens</i> | all woodland types | trees | | X | | | | |
| | Alder Flycatcher | <i>Empidonax alnorum</i> | wet thickets, especially of alder, maple, and birch | shrubs | | X | | | X | |
| | Willow Flycatcher | <i>Empidonax traillii</i> | moist, shrubby areas, often with standing or running water | shrubs | | X | X | | X | |
| | Least Flycatcher | <i>Empidonax minimus</i> | semi-open woodlands, fields | trees | | X | X | | | |
| | Acadian Flycatcher | <i>Empidonax virescens</i> | Relatively undisturbed mature forest, typically in ravines | trees/shrubs | | X | X | | | |
| | Eastern Phoebe | <i>Sayornis phoebe</i> | Woodlands and edge habitat near water | building | | | | | | X |
| | Great Crested Flycatcher | <i>Myiarchus crinitus</i> | open deciduous woodlands, old orchards, riparian corridors, wooded swamps, parks, cemeteries, and urban areas | tree cavities | | X | | | X | X |
| | Eastern Kingbird | <i>Tyrannus tyrannus</i> | open habitats with scattered perches, such as fields, orchards, shelterbelts, and forest edges. Uses urban parks | trees | | X | | | | X |
| | Blue-headed Vireo | <i>Vireo solitarius</i> | Conifer forests with spruce, fir, hemlock, and pine | trees | | X | | | | |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|---|-------------------------------|-----------------------------------|---|--------------------------------------|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| Vireos (Order Passeriformes) | White-eyed Vireo | <i>Vireo griseus</i> | deciduous shrubby areas | shrubs | | X | X | X | | |
| | Red-eyed Vireo | <i>Vireo olivaceus</i> | deciduous and mixed deciduous forests; interior forests preferred | trees | | X | | | | X |
| | Yellow-throated Vireo | <i>Vireo flavifrons</i> | Edge habitats in bottomland and upland mature deciduous and mixed deciduous-conifer forests | trees | | X | | | | |
| | Warbling Vireo | <i>Vireo gilvus</i> | mixed-deciduous woodlands, near water | trees | | X | | | X | |
| Jays, Crows, and Allies (Order Passeriformes) | Blue Jay | <i>Cyanocitta cristata</i> | all forests | trees | | X | | | | X |
| | American Crow | <i>Corvus brachyrhynchos</i> | any open place with some trees and a reliable food source | trees | | X | X | | X | X |
| | Common Raven | <i>Corvus corax</i> | all habitats | cliffs, trees, man-made structures | | X | | | | X |
| | Fish Crow | <i>Corvus ossifragus</i> | shorelines | trees | | X | | X | X | |
| Swallows (Order Passeriformes) | Tree Swallow | <i>Tachycineta bicolor</i> | open areas near water and fields, especially wooded swamps and shorelines | tree cavities | | X | | | X | |
| | Northern Rough-winged Swallow | <i>Stelgidopteryx serripennis</i> | wide variety of open habitats associated with streams and rivers | burrows | | | | | X | |
| | Bank Swallow | <i>Riparia riparia</i> | low areas along rivers, streams, or reservoirs | burrows in vertical banks and bluffs | | | | | X | |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|---|-------------------------|---------------------------------|--|--------------------------------------|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| | Barn Swallow | <i>Hirundo rustica</i> | variety of habitats with open areas including agricultural areas, cities, and along highways | buildings | | | | | | X |
| | Cliff Swallow | <i>Petrochelidon pyrrhonota</i> | grasslands, towns, broken forest, and riparian edge. | vertical wall or horizontal overhang | X | X | | X | | X |
| | Purple Martin | <i>Progne subis</i> | forests to urban areas | cavities | | X | | X | | X |
| | Black-capped Chickadee | <i>Poecile atricapillus</i> | deciduous and mixed forests, open woods, parks, and disturbed areas | tree cavities and nest boxes | | X | | | | X |
| Chickadees and Allies (Order Passeriformes) | Carolina Chickadee | <i>Poecile carolinensis</i> | forested areas | Cavities | | X | | X | | X |
| | Tufted Titmouse | <i>Baeolophus bicolor</i> | deciduous or mixed evergreen-deciduous woods, typically with a dense canopy and many tree species; also suburban areas; rarely reported at elevations above 2,000 feet | tree cavities | | X | | | | |
| | Red-breasted Nuthatch | <i>Sitta canadensis</i> | deciduous and coniferous forests | tree cavities | | X | | | | |
| Nuthatches and Creepers (Order Passeriformes) | White-breasted Nuthatch | <i>Sitta carolinensis</i> | mature woods, more often in deciduous than coniferous forests; also woodland edges and open areas with large trees, such as parks, wooded suburbs, and yards | tree cavities | | X | | | | X |
| | Brown Creeper | <i>Certhia americana</i> | coniferous and mixed coniferous-deciduous forests | trees | | X | | | | |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|--|------------------|---------------------------------|--|---------------------------|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| Wrens (Order Passeriformes) | Carolina Wren | <i>Thryothorus ludovicianus</i> | variety of habitats, from swamps to forest to residential; requires moderately dense shrub or brushy cover | tree cavities | | X | | | X | X |
| | House Wren | <i>Troglodytes aedon</i> | any habitat with trees, shrubs, and tangles interspersed with clearings | tree cavities, nest boxes | | X | | | | X |
| | Winter Wren | <i>Troglodytes hiemalis</i> | Old growth and mature conifer forests near water | highly variable | | X | X | | X | X |
| | Sedge Wren | <i>Cistothorus platensis</i> | Tall dense areas of grasses and sedges | herbaceous vegetation | | | | X | X | |
| Old World Warblers, Thrushes, and Allies (Order Passeriformes) | Eastern Bluebird | <i>Sialia sialis</i> | open country with trees | tree cavities, nest boxes | | X | | | | X |
| | Veery | <i>Catharus fuscescens</i> | damp, deciduous forests and riparian habitats; prefers disturbed forest with denser understory. Also in shrubby habitats with small trees | ground | | X | X | | X | |
| | Hermit Thrush | <i>Catharus guttatus</i> | interior of deciduous, mixed, and coniferous forest | ground | | X | | | | |
| | Wood Thrush | <i>Hylocichla mustelina</i> | interior and edges of deciduous and mixed forests, generally in cool, moist sites, often near water; requires moderate to dense understory and shrub density with a lot of shade | trees | | X | | | | |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|-------------------------------------|-----------------------|-------------------------------|--|---------------|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| | Blue-gray Gnatcatcher | <i>Poliophtila caerulea</i> | Range of wooded areas but prefer moist areas with broad-leaved trees | trees | | X | X | | | |
| | American Robin | <i>Turdus migratorius</i> | open woodland; lawns, fields, parks, woodlands, forests | trees | | X | | | | X |
| Mimids (Order Passeriformes) | Gray Catbird | <i>Dumetella carolinensis</i> | open woodland; dense shrubs, vine tangles, and thickets of young trees | shrubs | | X | X | | | |
| | Northern Mockingbird | <i>Mimus polyglottos</i> | open ground with shrubby vegetation like hedges, fruiting bushes, and thickets; second growth habitat | shrubs | | X | X | | | |
| | Brown Thrasher | <i>Toxostoma rufum</i> | brushy open country, thickets, shelter belts, riparian areas, and suburbs | shrubs | | X | X | | X | X |
| Waxwings (Order Passeriformes) | Cedar Waxwing | <i>Bombycilla cedrorum</i> | deciduous, coniferous, and mixed woodlands, particularly areas along streams; also in old fields, grasslands | trees | | X | | | X | |
| Wood-Warblers (Order Passeriformes) | Blue-winged Warbler | <i>Vermivora cyanoptera</i> | early to midsuccessional habitats, especially abandoned farmland and forest clearings; breeds at forest/field edges, often shaded by large trees | ground | | X | X | X | | |
| | Golden-winged Warbler | <i>Vermivora chrysoptera</i> | Dense patches of herbs and shrubs with some taller trees | ground | | X | X | X | | |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|---|------------------------------|-------------------------------|---|---------------|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| Wood- Warblers (Order Passeriformes) | Yellow Warbler | <i>Dendroica petechia</i> | wet, deciduous thickets, especially in willows; also in shrubby areas and old fields | shrubs | | X | X | X | X | |
| | Canada Warbler | <i>Cardellina canadensis</i> | Mixed coniferous-deciduous forests with well-developed understory | ground | | X | | | | |
| | Chestnut-sided Warbler | <i>Dendroica pensylvanica</i> | early successional deciduous woods | shrubs | | X | | | | |
| | Magnolia Warbler | <i>Dendroica magnolia</i> | small conifers, especially young spruces, in purely coniferous stands or mixed forest | trees | | X | | | | |
| | Black-throated Blue Warbler | <i>Dendroica caerulescens</i> | mature deciduous and mixed coniferous-deciduous woodlands with a thick understory | shrubs | | X | | | | |
| | Common Yellowthroat | <i>Geothlypis trichas</i> | thick vegetation from wetlands to prairies to pine forests. Frequently near water. | shrubs | | X | X | | X | |
| | Yellow-rumped Warbler | <i>Dendroica coronata</i> | mature coniferous and mixed coniferous-deciduous woodlands | trees | | X | | | | |
| | Black-throated Green Warbler | <i>Dendroica virens</i> | coniferous forest and transitional coniferous-deciduous forest | trees | | X | | | | |
| | Blackburnian Warbler | <i>Dendroica fusca</i> | mature coniferous and mixed coniferous/deciduous forests | trees | | X | | | | |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|--|-------------------------|--------------------------------|---|-----------------|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| Wood-Warblers (Order Passeriformes) | Prairie Warbler | <i>Dendroica discolor</i> | shrubby habitats, including regenerating forests, open fields | trees or shrubs | | X | X | X | | |
| | Kentucky Warbler | <i>Geothlypis formosa</i> | Bottomland hardwoods and woods near streams with dense understory | ground | | X | X | | | |
| | Black-and-white Warbler | <i>Mniotilta varia</i> | mature and second-growth deciduous and mixed forests | ground | | X | | | | |
| | American Redstart | <i>Setophaga ruticilla</i> | Moist second growth deciduous forest, with abundant shrubs | trees | | X | | | | |
| | Worm-eating Warbler | <i>Helmitheros vermivorum</i> | mature deciduous or mixed deciduous-coniferous forest with patches of dense understory, usually | ground | | X | | | | |
| | Ovenbird | <i>Seiurus aurocapilla</i> | mature deciduous, mixed deciduous, and coniferous forests | ground | | X | | | | |
| | Hooded Warbler | <i>Wilsonia citrina</i> | males in mature forest, and females in scrubby forest and seasonally flooded | shrubs | | X | | | | |
| | Louisiana Waterthrush | <i>Parkesia motacilla</i> | breeds along gravel-bottomed streams in deciduous forest | ground | | X | | | X | |
| | Northern Waterthrush | <i>Parkesia noveboracensis</i> | wooded areas near water | tree cavities | | X | | | X | |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|---|-----------------------------|--------------------------------|---|--|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| | Prothonotary Warbler | <i>Protonotaria citrea</i> | wooded areas near water | tree cavities | | X | | | | |
| | Cerulean Warbler | <i>Setophaga cerulea</i> | Mature forests with large, tall, broad-leaved deciduous trees | trees | | X | | | | |
| | Yellow-throated Warbler | <i>Setophaga dominica</i> | swamps and pine forests | trees | | X | | | | |
| | Pine Warbler | <i>Setophaga pinus</i> | Upland pine and pine-hardwood forests | trees | | X | | | | |
| | Northern Parula | <i>Setophaga americana</i> | Riparian forest areas | trees | | X | | | X | |
| | Larks (Order Passeriformes) | Horned Lark | <i>Eremophila alpestris</i> | Open areas with sparse, short vegetation | ground | X | | | X | |
| Tanagers, Cardinals, and Allies (Order Passeriformes) | Blue Grosbeak | <i>Passerina caerulea</i> | Open woodlands | Trees/shrubs | | X | X | X | | X |
| | Scarlet Tanager | <i>Piranga olivacea</i> | deciduous and mixed deciduous/coniferous woodlands, especially mature forests | trees | | X | | | | |
| | Northern Cardinal | <i>Cardinalis cardinalis</i> | dense shrubby areas | shrubs | | X | X | X | X | X |
| | Rose-breasted Grosbeak | <i>Pheucticus ludovicianus</i> | deciduous and mixed woodlands, especially at the edges. | trees | | X | | | | X |
| | Indigo Bunting | <i>Passerina cyanea</i> | brushy and weedy areas along edges and in open deciduous woods and old fields | shrubs | | X | X | | | X |
| | Dickcissel | <i>Spiza americana</i> | grasslands | shrubs | | | X | X | | |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|--|---------------------|----------------------------------|---|---------------|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| Emberizine Sparrows and Allies (Order Passeriformes) | Henslow's Sparrow | <i>Ammodramus henslowii</i> | Tall, dense grassland areas with a thick litter layer | ground | X | | | X | | |
| | Eastern Towhee | <i>Pipilo erythrophthalmus</i> | forests and shrublands. dense shrub cover important | ground | | X | X | X | | X |
| | Fox Sparrow | <i>Passerella iliaca</i> | forest thickets | ground | | X | X | | | |
| | Chipping Sparrow | <i>Spizella passerina</i> | woodlands and edges, parks and shrubby or tree-lined backyards | shrubs | | X | X | | | X |
| | Field Sparrow | <i>Spizella pusilla</i> | old fields, woodland openings, and edges | ground | | X | | X | | |
| | Saltmarsh Sparrow | <i>Ammodramus caudacutus</i> | salt marshes | ground | | | | X | X | |
| | Grasshopper Sparrow | <i>Ammodramus savannarum</i> | Moderately open grasslands and prairies with patchy bare ground | ground | | | | X | | |
| | Dark-eyed Junco | <i>Junco hyemalis</i> | coniferous and deciduous forests | ground | | X | | | | |
| | Savannah Sparrow | <i>Passerculus sandwichensis</i> | open country | ground | X | | | X | | |
| | Vesper Sparrow | <i>Pooecetes gramineus</i> | grasslands and other open areas with some woody structure | ground | | | | X | | |
| | Swamp Sparrow | <i>Melospiza georgiana</i> | various wetlands | shrubs | | | | | X | |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|--------------------------------------|----------------------|------------------------------|--|--|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| | Song Sparrow | <i>Melospiza melodia</i> | variety of open habitats, such as agricultural fields, overgrown pastures, freshwater marsh and lake edges, forest edges, and suburbs; also deciduous or mixed woodlands | shrubs | X | X | X | X | X | X |
| Icterids (Order Passeriformes) | Bobolink | <i>Dolichonyx oryzivorus</i> | open grasslands and hay fields | ground | X | | | X | | |
| | Red-winged Blackbird | <i>Agelaius phoeniceus</i> | wet places like marshes; also drier places like sedge meadows, alfalfa fields, and fallow fields | marsh vegetation, shrubs, or trees near ground | | | X | X | X | |
| | Rusty Blackbird | <i>Euphagus carolinus</i> | wooded swamps | trees | | X | | X | X | |
| | Yellow-breasted Chat | <i>Icteria virens</i> | dense second-growth, riparian thickets, and brush | shrubs | | X | X | | X | |
| | Baltimore Oriole | <i>Icterus galbula</i> | woodland edges and open areas with scattered trees | trees | | X | | | | X |
| | Orchard Oriole | <i>Icterus spurius</i> | Riparian zones, floodplains, marshes, and shorelines. | trees | | X | | | | |
| | Eastern Meadowlark | <i>Sturnella magna</i> | grasslands, pastures, hayfields, croplands | ground | X | | | X | | |
| | Brown-headed Cowbird | <i>Molothrus ater</i> | grasslands with low, scattered trees; woodland edges, brushy thickets, prairies, fields, pastures, orchards, and residential areas | trees | | X | | | | X |

| Taxonomic Group | Common Name | Scientific Name | General Breeding Habitat (Nesting and Foraging) | Nest Location | Nest Location Habitat Category ^b | | | | | |
|--------------------------------|------------------------|-----------------------------|--|------------------|---|--------|-------|------|----------------------|-----------|
| | | | | | Agriculture | Forest | Shrub | Open | Aquatic ^c | Developed |
| | Common Grackle | <i>Quiscalus quiscula</i> | human landscapes, with scattered trees and open ground; natural habitats include open woodland, forest edge, grassland, meadows, swamps, marshes; common near agricultural fields and feedlots, suburbs, city parks, cemeteries, pine plantations, and hedgerows | trees | | X | | | X | X |
| Kinglets (Order Passeriformes) | Golden-crowned Kinglet | <i>Regulus satrapa</i> | conifer forests | trees | | X | | | | |
| Finches (Order Passeriformes) | Purple Finch | <i>Carpodacus purpureus</i> | moist, cool evergreen forests; also mixed forests, along wooded streams, and in tree-lined suburbs | trees | | X | | | X | X |
| | House Finch | <i>Carpodacus mexicanus</i> | man-made habitats including buildings, lawns, small conifers, and urban centers | trees | | | | | | X |
| | Pine Siskin | <i>Pinus spinus</i> | conifer or mixed forests | trees | | X | | | | |
| | American Goldfinch | <i>Spinus tristis</i> | old fields and other overgrown areas, prefer some shrubs and trees for nesting; also in suburbs, parks, and backyards | shrub or sapling | | X | X | X | X | X |

Notes:

^a The grey-shading above denotes those species that are designated as USFWS Birds of Conservation Concern (BCC).

^b Nest location habitat category corresponds only to habitat where the nest is built. Foraging habitat may occur in several other types aside from that indicated for the location of the nest.

^c Includes forested, shrub, emergent and open water community types.

APPENDIX C

**USFWS PENNSYLVANIA FIELD OFFICE
ADAPTIVE MANAGEMENT FOR THE
CONSERVATION OF MIGRATORY BIRDS**

The following comments are provided pursuant to the Migratory Bird Treaty Act (MBTA, 16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755, as amended) to ensure the protection of migratory bird species.

Assessment of Risks to Migratory Birds

The Fish and Wildlife Service is the principal Federal agency charged with protecting and enhancing populations and habitat of migratory bird species (*i.e.* bird species that spend all or part of their lives in the United States). The Migratory Bird Treaty Act prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the MBTA has no provision for authorizing incidental take, the Service recognizes that some birds may be killed even if all reasonable measures to avoid take are implemented. Unless the take is authorized, it is not possible to absolve individuals, companies or agencies from liability (even if they implement avian mortality avoidance or similar conservation measures). However, the Office of Law Enforcement focuses on those individuals, companies, or agencies that take migratory birds with disregard for their actions and the law, especially when conservation measures have been developed but are not properly implemented.

The potential exists for avian mortality from habitat loss and alteration within project boundaries. Site-specific factors that should be considered in project siting to avoid and minimize the risk to birds include avian abundance; the quality, quantity and type of habitat; geographic location; type and extent of bird use (*e.g.* breeding, foraging, migrating, etc.); and landscape features. We recommend minimization of land and vegetation disturbance during project design and construction. Keep new activities constrained to previously disturbed areas wherever possible (*e.g.*, road and utility line rights-of-way, agricultural fields, previously mined areas, etc.).

We offer the following recommendations to avoid and minimize impacts to migratory birds within and around the project area:

- 1) Due to the difficulty in assessing the entire project site for all bird nests, we recommend that the clearing of natural or semi-natural habitats (*e.g.*, forests, woodlots, reverting fields, fencerows, and shrubby areas) be carried out between September 1 and March 31, which is outside the nesting season for most native bird species. Without undertaking specific analysis of breeding species and their respective nesting seasons on the project site, implementation of this seasonal restriction will avoid take of most breeding birds, their nests, and their young (*i.e.*, eggs, hatchlings).
- 2) Avoid permanent habitat alterations in areas where birds are highly concentrated. Examples of high concentration areas for birds are wetlands, State or Federal refuges, Audubon Important Bird Areas, private duck clubs, staging areas, rookeries, leks, roosts, and riparian areas. Avoid establishing sizable structures along known bird migration pathways or known daily movement flyways (*e.g.*, between roosting and feeding areas).
- 3) To conserve area-sensitive species, avoid fragmenting large, contiguous tracts of wildlife habitat, especially if habitat cannot be fully restored after construction. Maintain

contiguous habitat corridors to facilitate wildlife dispersal. Where practicable, concentrate construction activities, infrastructure, and man-made structures (*e.g.*, buildings, cell towers, roads, parking lots) on lands already altered or cultivated, and away from areas of intact and healthy native habitats. If not feasible, select fragmented or degraded habitats over relatively intact areas.

- 4) To reduce habitat fragmentation, co-locate roads, fences, lay down areas, staging areas, and other infrastructure in or immediately adjacent to already-disturbed areas (*e.g.*, existing roads, pipelines, agricultural fields). Where this is not possible, minimize roads, fences, and other infrastructure. To minimize habitat loss and fragmentation, cluster development features (*e.g.*, houses, commercial buildings, roads) rather than distributing them throughout land parcels.
- 5) Develop a habitat restoration plan for the proposed site that avoids or minimizes negative impacts on vulnerable wildlife. Use only plant species that are native to the local area for revegetation of the project area.

APPENDIX D
AGENCY CORRESPONDENCE



Division of Environmental
Planning and Habitat
Protection
717-783-5957

COMMONWEALTH OF PENNSYLVANIA
Pennsylvania Game Commission

2001 ELMERTON AVENUE
HARRISBURG, PA 17110-9797

*"To manage all wild birds, mammals and their habitats
for current and future generations."*

ADMINISTRATIVE BUREAUS:

ADMINISTRATION.....717-787-5670
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PROCUREMENT.....717-787-6594
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WILDLIFE HABITAT
MANAGEMENT.....717-787-6818
REAL ESTATE DIVISION.....717-787-6568
AUTOMATED TECHNOLOGY
SERVICES.....717-787-4076

www.pgc.state.pa.us

June 8, 2016

PGC ID Number: 201312180001 (Update)

Preston Smith
Tetra Tech
661 Anderson Drive, Foster Plaza
Pittsburgh, Pa 15220
preston.smith@tetrattech.com

Re: Sunoco Pipeline, LP – Pennsylvania Pipeline Project (*Update*)
State Game Lands Nos. 46, 52, 71, 118, 147, 198, and 276
Large Project PNDI Review
Washington, Westmoreland, Indiana, Cambria, Blair, Huntingdon, Perry, Cumberland, Lebanon,
Lancaster, Berks, and Chester Counties, PA

Dear Mr. Smith,

Thank you for submitting your Pennsylvania Natural Diversity Inventory (PNDI) Large Project Environmental Review request. The Pennsylvania Game Commission (PGC) screened this project for potential impacts to species and resources of concern under PGC responsibility, which includes birds and mammals only. This is an update to the PNDI letter that was issued on August 18, 2015 based on the additional information provided to the PGC.

Potential Impact Anticipated

PNDI records indicate species or resources of concern are located in the vicinity of the project. The PGC has received and thoroughly reviewed the information that you provided to this office as well as PNDI data, and has determined that potential impacts to threatened, endangered, and species of special concern may be associated with your project. Therefore, additional measures are necessary to avoid potential impacts to the species listed below:

| Scientific Name | Common Name | PA Status | Federal Status |
|----------------------------------|--------------------------|-----------------|----------------|
| <i>Myotis sodalis</i> | Indiana Bat | ENDANGERED | ENDANGERED |
| <i>Myotis septentrionalis</i> | Northern Long-eared Bat | THREATENED | THREATENED |
| <i>Myotis leibii</i> | Eastern Small-footed Bat | THREATENED | NA |
| <i>Neotoma magister</i> | Allegheny Woodrat | THREATENED | NA |
| <i>Circus cyaneus</i> | Northern Harrier | THREATENED | NA |
| <i>Lasionycteris noctivagans</i> | Silver-haired Bat | SPECIAL CONCERN | NA |

Indiana Bat and Northern Long-eared Bat

Indiana and Northern long-eared bats are a federally listed species under the jurisdiction of the U.S. Fish and Wildlife Service. As a result, our agency defers comments on potential impacts to Indiana and Northern long-eared bats to the U.S. Fish and Wildlife Service.

Eastern Small-footed Bat

The PGC has identified portions of the proposed project where potential eastern small-footed bat habitat may exist, and could be impacted by the proposed project. The PGC requested eastern small-footed bat habitat surveys be completed within these areas. Eastern small-footed bat habitat surveys were conducted in 2014 and 2015 to identify and delineate suitable roosting habitat. Rocky areas deemed suitable as eastern small-footed bat day roosts were identified within the project area. Mitigation for impacts to these rocky areas will consist of the construction and monitoring of 20 replacement roost structures following the details described in the approved mitigation plan.

Allegheny Woodrat

The PGC has identified portions of the proposed project where potential Allegheny woodrat habitat may exist, and could be impacted by the proposed project. The PGC requested Allegheny woodrat habitat surveys be completed within these areas. Allegheny woodrat habitat surveys were conducted in 2014 and 2015 to identify and delineate suitable woodrat habitat. Two areas surveyed contained suitable habitat with evidence of woodrat presence within the vicinity of the project area. Mitigation for impacts to these areas will consist of revegetation plantings, replacement travel corridors, and replacement rock structures following the details described in the approved mitigation plan.

Northern Harrier

In its March 14, 2014 response letter, the PGC requested a seasonal restriction in select areas to protect nesting northern harriers that have been documented in the vicinity of the proposed project. A habitat survey was conducted in 2014 which revealed the current land conditions at the areas in question are not suitable northern harrier habitat. Based on this information impacts to northern harriers is not likely. Therefore, no further coordination with the PGC is necessary for this species at this time.

Silver-haired Bats

Silver-haired bats are species of special concern, and therefore, not target species for additional surveys. However, because of their ecological significance, the PGC recommends that to the greatest extent practicable, all trees or dead snags greater than 5 inches in diameter at breast height that need to be harvested to facilitate the project (including any access roads or off-ROW work spaces) should be cut between November 1st and March 31st.

Potential Bat Hibernacula

In its March 14, 2014 response letter, the PGC requested potential bat hibernacula investigations. Desktop analysis revealed 12 potential bat hibernacula in the vicinity of the project. These 12

features were investigated during 2014 during which no bats were captured. Therefore no further coordination with the PGC is necessary for these features.

State Game Lands

Portions of the proposed project are located on State Game Lands Nos. 46, 52, 71, 118, 147, 198, and 276. Please contact Mr. Scott Tomlinson, Southwest Region Land Management Supervisor, at 724-238-9523 to discuss and coordinate the project on SGL 276, Mr. Robert Einodshofer, Southcentral Region Land Management Supervisor, at 814-643-1831 to discuss and coordinate the project on SGL 71, 118, 147, and 198, and Mr. Dave Mitchell, Southeast Region Land Management Supervisor, at 610-926-3136 to discuss and coordinate the project on SGL 46 and 52.

Wetlands

National Wetland Inventory Mapping (NWI) and/or aerial photos suggest that wetlands are located within the proposed project area. The PGC is requesting that the final project avoid, or at least minimize to the greatest extent practicable, any adverse impacts to these resources and their associated wildlife habitat.

This response represents the most up-to-date summary of the PNDI data files and is valid for two (2) years from the date of this letter. An absence of recorded information does not necessarily imply actual conditions on site. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered.

Should the proposed work continue beyond the period covered by this letter, please resubmit the project to the PGC at the following address as an "Update" (including an updated PNDI receipt, project narrative and accurate map):

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning & Habitat Protection
2001 Elmerton Avenue
Harrisburg, PA 17110-9797

If the proposed work has not changed and no additional information concerning listed species is found, the project will be cleared for PNDI requirements by the PGC for an additional 2 years.

This finding applies to impacts to birds and mammals only. To complete your review of state and federally-listed threatened and endangered species and species of special concern, please be sure that the U.S. Fish and Wildlife Service, the PA Department of Conservation and Natural Resources, and/or the PA Fish and Boat Commission have been contacted regarding this project as directed by the online PNDI ER Tool found at www.naturalheritage.state.pa.us.

Please be sure to include the above-referenced PGC ID Number on any future correspondence with the PGC regarding this project.

Sincerely,



John Taucher
Division of Environmental Planning & Habitat Protection
Bureau of Wildlife Habitat Management
Phone: 717-787-4250, Extension 3632
Fax: 717-787-6957
E-mail: jotaucher@pa.gov

A PNHP Partner



JWT/jwt

cc: Anderson
Myers
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Trusso
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Einodshofer
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Barber
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Havens
Librandi Mumma
Ms. Pamela Shellenberger, U.S. Fish and Wildlife Service
H:\OIL&GAS_PNDI_Reviews\Statewide & Multi-Region Projects



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, Pennsylvania 16801-4850

June 24, 2016

Preston Smith
Tetra Tech
661 Andersen Drive
Foster Plaza
Pittsburgh, PA 15220-2700

RE: USFWS Project #2014-0200

Dear Mr. Smith:

Thank you for your letters of April 22 and 26, 2016, as well as your email of May 12, 2016, which provided the Fish and Wildlife Service (Service) with additional information regarding Sunoco Pipeline, L.P., proposed Pennsylvania Pipeline (formerly part of the Sunoco Mariner East 2 Pipeline) project located in Washington, Allegheny, Westmoreland, Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland, York, Dauphin, Lebanon, Lancaster, Berks, Chester, and Delaware counties, Pennsylvania. The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species and the Migratory Bird Treaty Act (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755, as amended) to ensure the protection of migratory bird species.

The project involves the phased installation of approximately 561 miles of two parallel pipelines within a 306-mile, 50-foot wide right-of-way (ROW) from Houston, Washington County, Pennsylvania to Sunoco Pipeline, L.P.'s (SPLP), Twin Oaks facility in Delaware County, Pennsylvania with the purpose of interconnecting with existing SPLP Mariner East pipelines. As initially described, a 20-inch diameter pipeline would be installed within the ROW from Houston, PA to the Twin Oaks facility (306 miles) and a second, up to 20-inch diameter pipeline, is proposed to be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, Pennsylvania to the Twin Oaks facility, paralleling the initial line for approximately 255 miles.

Federally listed species

Bog Turtle

The project area is within the range of the bog turtle (*Clemmys muhlenbergii*), a species that is federally listed as threatened. The species inhabits shallow, spring-fed fens, sphagnum bogs,

swamps, marshy meadows, and pastures characterized by soft, muddy bottoms; clear, cool, slow-flowing water, often forming a network of rivulets; high humidity; and an open canopy. To determine the potential effects of the proposed project on bog turtles and their habitat, Stan Boder, James Drasher, Kevin Keat, Jason Tesauro, Ben Berra, Andy Brookens, and Logan Zugay conducted Phase I bog turtle habitat assessments on all wetlands within 300 feet of the project's proposed limit of disturbance (LOD). According to their reports, 430 wetlands extend to within 300 feet of the proposed LOD within the range of the bog turtle. Following the methods described under "Bog Turtle Habitat Survey" (Phase I survey) of the Guidelines for Bog Turtle Surveys (revised April 2006), the surveyors determined that 334 of the subject wetlands do not have the combination of soils, vegetation, and hydrology typical of habitat occupied by bog turtles. We agree with their habitat determination for those wetlands.

Species presence surveys (Phase II surveys) were initiated at 99 wetlands determined by the surveyors to have the combination of habitat characteristics typical of areas occupied by bog turtles. Based on survey results and known bog turtle occurrences, Tetra Tech reported that there are four wetlands within the LOD and four wetlands within 300 feet of the LOD that are occupied by bog turtles (Table 1.).

Table 1. Occupied wetlands the will be directly or indirectly affected by the action.

| Wetlands | BT Occupancy | Location |
|----------|--------------|-----------------|
| A54 | Occupied | Within LOD |
| A55 | Occupied | Within LOD |
| AM2 | Occupied | Within LOD |
| AM3 | Occupied | Within 300 feet |
| C6 | Occupied | Within LOD |
| C7 | Occupied | Within 300 feet |
| C8 | Occupied | Within 300 feet |
| C44 | Occupied | Within 300 feet |

To avoid adverse effects to the known bog turtle populations in wetlands A54 and A55 the applicant has proposed the following measures:

1. Drill under Wetlands A54 and A55 using horizontal directional drilling (HDD) during the bog turtle active season (April 1 and October 31);
 - a. Prior to performing any construction work in wetlands, streams, or uplands within 300 feet of the potential bog turtle habitat, all areas of expected disturbance must be surveyed by a qualified surveyor for the presence of bog turtles immediately prior to construction commencement.
 - b. Prior to the survey, herbaceous vegetation should be cut to a height of 4 to 6 inches using a hand-held trimmer/weed-cutter, and then carefully raked away from the area to be searched. A qualified bog turtle surveyor should be present when this vegetation clearing occurs.
 - c. Immediately following the survey, silt-fencing should be placed between the wetland and the proposed construction zone while the bog turtle surveyor is present to ensure that the fencing is properly installed in the correct location. The silt-fencing should be removed immediately following construction.

2. Ensure the HDD will be in bedrock prior to drilling beneath the wetlands by utilizing the information provide in geotechnical reports;
3. Implement Service-approved Inadvertent Return Contingency Plan;
4. Install a series of piezometers to monitor groundwater conditions before, during, and after the HDD following a Service-approved monitoring plan.
5. Post-construction routine pipeline operation and maintenance protective measures:
 - a. "No Mowing" signs will be placed along the boundary of Wetlands A54 and A55 to prevent disturbance during post-construction right-of-way (ROW) maintenance activities;
 - b. Additional signs will be placed at the edge of Zone 2 (300 feet from the wetland edge) to demarcate the limit of herbicide application within the ROW;
 - c. Only hand clearing will occur in Zone 2 and will be conducted between October 1 and March 31.

During an April 6, 2016, field view, Service-biologist Brian Scofield, acknowledged the marginal, but suitable, habitat conditions of Wetland AM2 and recommended a time-of-year restriction or pre-construction survey. The same recommendation was given for Wetlands AM3, C7, C8, and C44 because of their proximity to known bog turtle populations. Therefore, the applicant has proposed that either construction will take place between November 1 and March 31, when bog turtles are hibernating, or a pre-construction survey will be performed if construction occurs between April 1 and October 31, during which time bog turtles are active. If construction takes place during the active season the following measures will be followed.

1. Prior to performing any construction work in wetlands, streams, or uplands within 300 feet of the potential bog turtle habitat, all areas of expected disturbance must be surveyed by a qualified surveyor for the presence of bog turtles immediately prior to construction commencement.
2. Prior to the survey, herbaceous vegetation should be cut to a height of 4 to 6 inches using a hand-held trimmer/weed-cutter, and then carefully raked away from the area to be searched. A qualified bog turtle surveyor should be present when this vegetation clearing occurs.
3. Immediately following the survey, silt-fencing should be placed between the wetland and the proposed construction zone while the bog turtle surveyor is present to ensure that the fencing is properly installed in the correct location. The silt-fencing should be removed immediately following construction.
4. If any bog turtles are located during these searches, the Service and Pennsylvania Fish and Boat Commission (PFBC) should be contacted immediately, and construction should not proceed until further consultation occurs. Survey results should be submitted to the Service and PFBC.

To avoid the risk of take to the known bog turtle population in Wetland C6 the applicant has proposed the use of a dry-bore to go under the wetland and avoid surface impacts. Because dry-bore technology does not utilize pressurized fluid to bore, there is no risk of an inadvertent return; therefore, the applicant has proposed the same minimization measures as Wetlands AM2, AM3, C7, C8, and C44.

With the implementation of the avoidance and conservation measures listed above and in the

applicant's April 2016 Bog Turtle Conservation Plan, this project is not likely to adversely affect the bog turtle. If you are unable to implement all proposed avoidance measures or project plans change, further consultation with the Service will be required, pursuant to the Endangered Species Act.

Indiana bat

The proposed project is located within the range of the Indiana bat (*Myotis sodalis*), a species that is federally listed as endangered. Mist-net surveys were conducted within the appropriate survey windows between May 15, 2014, and August 4, 2015, for Indiana bats. Surveys were carried out only where suitable habitat existed and where those areas occurred outside of already assumed occupied habitats (swarming areas).

According to the April 2016 survey report, surveys were conducted at 294 survey blocks within the project area, in accordance with the Fish and Wildlife Service's 2014 and 2015 Indiana bat summer survey guidelines, which are designed to detect the presence of Indiana bat maternity colonies. During these surveys, no Indiana bats were captured. Additionally, 12 portals were analyzed as potential hibernacula. Harp traps and acoustic surveys were performed, but did not yield any Indiana bat captures or calls. Therefore, based on these survey results, we conclude (1) there is no higher population density of Indiana bat activity that would be typical of a maternity colony, and (2) it is unlikely that the studied mine portals support Indiana bats.

Portions of the project area are within two known Indiana bat hibernacula swarming areas. Swarming areas are habitat surrounding known hibernation sites that the bats depend on for spring staging and fall swarming (the periods following emergence from hibernation and prior to reentering hibernation, respectively). These swarming areas are also used by some male bats, but are not used by reproductive females through the warmer seasons. As such, Sunoco Pipeline, L.P., has submitted an Indiana Bat Conservation Plan. The proposed project will affect approximately 258 acres of forest habitat in the vicinity of the Hartman Mine Indiana bat swarming area. To avoid adverse effects on Indiana bats, Sunoco Pipeline, L.P. has agreed to implement the measures outlined in their April 2016 Indiana Bat Conservation Plan for the subject pipeline project. This includes a commitment to cut trees between November 15 and March 31 in the Indiana bat swarming area. The Conservation Plan also details specific measures that will be implemented to avoid indirect effects of the cumulative forested habitat loss on Indiana bats, including the contribution of \$1,002,819 into the Indiana Bat Conservation Fund that will be used for permanent conservation of Indiana bat habitat.

The project information and our analysis includes a portion of the pipeline project that traverses through Raystown Lake Recreation Area, which is located in Hartman Mine Indiana Bat Swarming Area. Sunoco Pipeline, L.P. has committed to removing these trees between November 15 and March 31 during a time when bats are assumed to be hibernating to avoid the risk of directly killing roosting bats.

Additionally, a small segment of the pipeline will traverse a portion of the Layton Fire Clay Mine Indiana bat swarming area. There is limited tree clearing proposed here (approximately 0.62 acres), due to this portion of the line being collocated with an existing right-of-way. To

avoid the risk of directly killing or injuring Indiana bats, Sunoco Pipeline L.P., has agreed to implement tree clearing in this swarming area between November 15 and March 31.

The Service has reviewed the Conservation Plan and found it to address the recommended avoidance and conservation measures outlined in our guidance. Therefore, with the implementation of these measures: (1) time of year restrictions on tree clearing to avoid the risk of direct take of Indiana bats, (2) the results of the mist-net and hibernacula surveys that failed to locate maternity colonies or new hibernation sites, and (3) use of the Indiana Bat Conservation Fund to offset indirect effects to bats that may result from aggregate forest habitat loss of swarming habitat, we conclude that effects of the project on the Indiana bat are insignificant or discountable.

Northern long-eared bat

The proposed project is located within the range of the federally threatened northern long-eared bat (*Myotis septentrionalis*). On February 16, 2016, the final rule that tailors protections for the northern long-eared bat under the Endangered Species Act became effective (81 FR 1900; see: <http://www.fws.gov/midwest/endangered/mammals/nlecb/pdf/FRnlecbFinal4dRule14Jan2016.pdf>).

Mist-net surveys were conducted within the appropriate survey windows between May 15, 2014 and August 4, 2015, for northern long-eared bats.

According to the April 2016 survey report, surveys were conducted at 294 survey blocks within the project area, in accordance with the Fish and Wildlife Service's 2014 and 2015 Indiana bat summer survey guidelines. During the 2014 surveys, 30 northern long-eared bats were captured and 13 were radio-tracked. Two more northern long-eared bats were captured and radio-tracked in 2015 surveys. Additionally, 12 portals were analyzed as potential hibernacula. Harp trapping and acoustic surveys were performed at the portals, but did not yield any northern long-eared bat captures or calls.

Although several northern long-eared bat roost trees were documented close to the LOD, only one roost tree was identified within 150 feet of project disturbance. In accordance with the final 4(d) rule, removal of this roost tree will not occur between June 1 and July 31. Additionally, your project is not located within 0.25 mile of a known northern long-eared bat hibernaculum. Therefore, following the June 1 --July 31 time of year restriction on roost tree clearing, any incidental take that might result from tree removal is not prohibited, and no further consultation regarding this species is necessary. More information on the northern long-eared bat and the 4(d) rule can be found here: <http://www.fws.gov/midwest/endangered/mammals/nlecb/>

Northeastern bulrush

The project is within the known range of the northeastern bulrush (*Scirpus ancistrochaetus*), a federally listed, endangered plant. Surveys were conducted for this species in 2014 and 2015. 231 potential northeastern bulrush habitat areas were identified. These 231 habitat areas revealed two previously undocumented northeastern bulrush populations. The Blair County population is located approximately 340 feet from the edge of the proposed LOD and is not hydrologically connected to Wetland L70, which is located in the ROW.

The Cambria County population is located within the LOD, approximately 75 feet from a proposed access road. To minimize and avoid impacts to this population, Sunoco Pipeline, L.P., proposes to install the pipeline under this wetland system via HDD. While we support this method of crossing to reduce vernal pool and wetland impacts, best management practices need to be employed to minimize potential harm to listed species. The pipeline will be approximately 50 feet below the surface. The entry point will be about 150 feet from the population and the exit point will be about 1,534 feet southeast of the population. The HDD length will be approximately 1,684 feet.

Despite best intentions, drilling fluids can still be released to the surface. Damage to the wetlands, its hydrology, flora or fauna can occur from equipment used to clean up the drilling fluid material. Therefore, all precautions to prevent an inadvertent release (IR) should be implemented, including examining the subsurface soil and bedrock material to determine geotechnical limitations or IR probability, and designing a drill path to minimize drill pressure and entry angles. As a means to minimize impacts should an IR occur, you provided an HDD Inadvertent Release Contingency Plan. In addition to the instructions in this Plan, please add the USFWS phone number (provided below) as an agency to be contacted should an IR occur, and inform the HDD contractor about the sensitive nature of the drill at this location.

With the aforementioned buffers in place and a successful HDD, this project is not likely to adversely affect these northeastern bulrush populations.

Assessment of Risks to Migratory Birds

As mentioned in our letter of March 19, 2014, and discussed during our meeting of September 9, 2015, the Service is the principal Federal agency charged with protecting and enhancing populations and habitat of migratory bird species; however, at this point, you have not provided us with a migratory bird conservation plan or any other information about how, or if, SPLP will minimize impacts to migratory bird species. The Migratory Bird Treaty Act prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the MBTA has no provision for allowing unauthorized take, the FWS recognizes that some birds may be taken during activities such as pipeline construction even if all reasonable measures to avoid take are implemented. The FWS's Office of Law Enforcement carries out its mission to protect migratory birds not only through investigation and enforcement, but also through fostering relationships with individuals and industries that proactively seek to eliminate their impacts on migratory birds. Although it is not possible under the MBTA to absolve individuals, companies, or agencies from liability (even if they implement avian mortality avoidance or similar conservation measures), the Office of Law Enforcement focuses on those individuals, companies, or agencies that take migratory birds with disregard for their actions and the law, especially when conservation measures have been developed but are not properly implemented.

The potential exists for avian mortality from habitat destruction and alteration within the project boundaries. Site-specific factors that should be considered in project siting to avoid and minimize the risk to birds include avian abundance; the quality, quantity and type of habitat; geographic location; type and extent of bird use (e.g. breeding, foraging, migrating, etc.); and

landscape features. Please review the enclosed information for general recommendations for avoiding and minimizing impacts to migratory birds within and around the project area. Please be aware that since these are general guidelines, some of them may not be applicable to the current project design or they may have already been included in the project design.

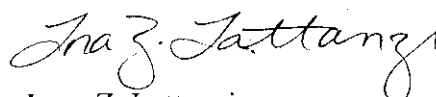
Your project is located in the vicinity of several Important Bird Areas (IBAs). IBAs are designated by the Pennsylvania Ornithological Technical Committee. They are the most critical regions in the Commonwealth for conserving bird diversity and abundance, and are the primary focus of Audubon Pennsylvania's conservation efforts. To find out more information about this IBA, including which bird species breed there, visit: <http://netapp.audubon.org/IBA/State/US-PA>.

We are happy to further discuss how SPLP can minimize impacts to these species. As a means to minimize impacts, please see the enclosed migratory bird general guidance document that was also provided to you in our March 19, 2014, letter.

To avoid potential delays in reviewing your project, please use the above-referenced USFWS project tracking number in any future correspondence regarding this project.

Please contact Pamela Shellenberger or Brian Scofield of this office at (814) 234 4090 if you have any questions or require further assistance regarding this matter.

Sincerely,

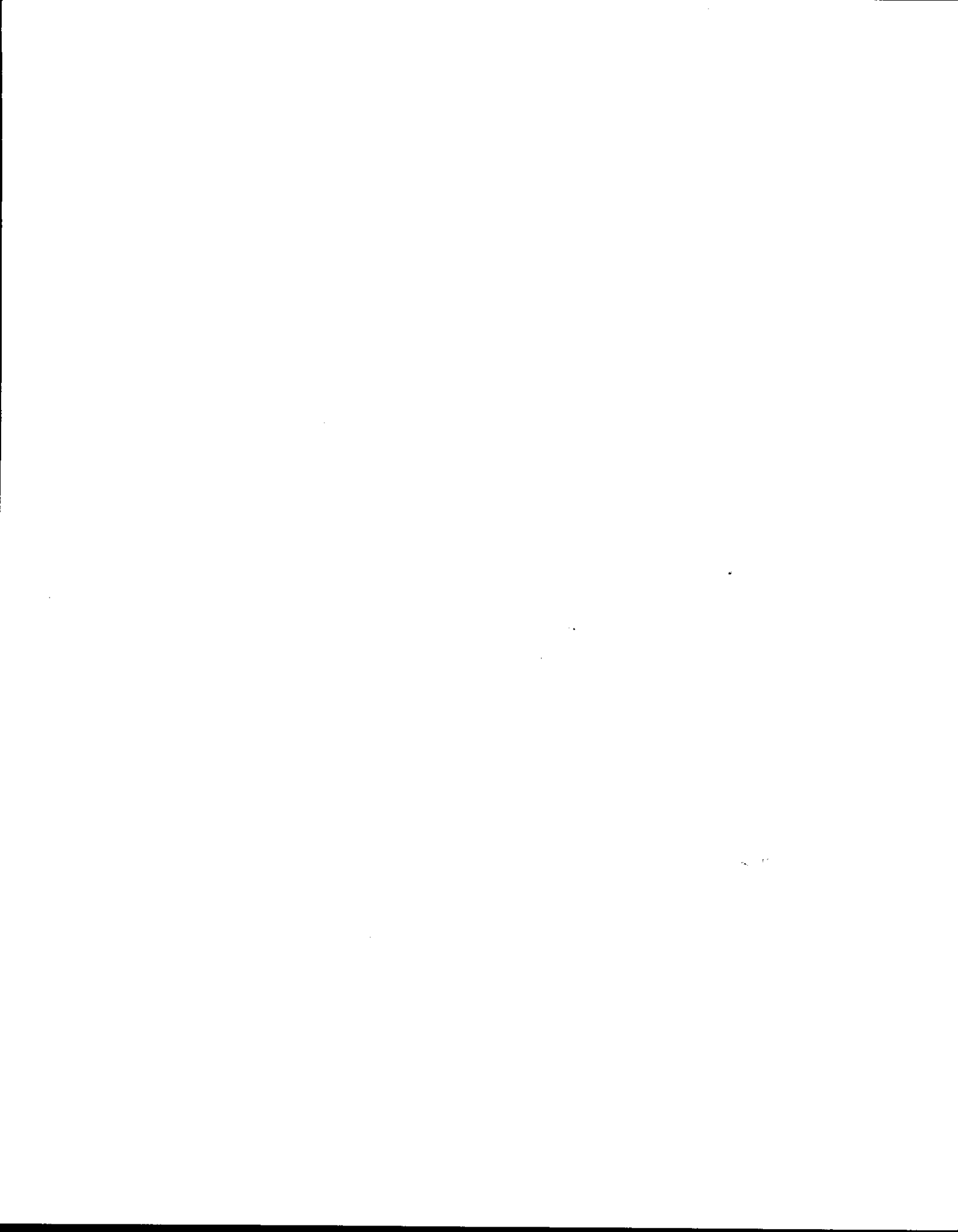


Lora Z. Lattanzi
Field Office Supervisor

Enclosure

cc:

Corps – W. Chandler
DEP – A. McDonald



**CALCULATION SHEET FOR
INDIANA BAT HABITAT COMPENSATION**
(revised 9/22/2014)

USFWS Project # 2014-0200 Date 04/26/2016
 Project Name: Pennsylvania Pipeline Project
 Project Location (township and county): Pennsylvania
 Project Type: Natural Gas Liquids Pipeline DEP permit # _____
 Hibernaculum and/or Maternity Colony Affected: Hartman Mine

Table 1. Calculation of Compensation Acres

| IMPACT TYPE | IMPACT ACRES | MULTIPLIER ¹ | COMPENSATION ACRES |
|---|--------------|-------------------------|--------------------|
| Summer Habitat Loss² | | | |
| Known maternity habitat | | 1.5 | |
| Known non-maternity habitat | | 1.0 | |
| Potential habitat ³ | | 0.5 | |
| Swarming Habitat Loss⁴ | | | |
| P2 or P3 | 258 | 1.5 | 387 |
| P4 | | 1.0 | |
| Overlapping Habitat Loss⁵ | | | |
| Known maternity and swarming habitat occur together: choose highest multiplier from above (maternity or swarming) for the impact, and add 1.0 to the multiplier | | | |

¹ Multiplier provides for a PARTIAL offset of habitat impacts and assumes permanent habitat protection will occur in accordance with the *Indiana Bat Mitigation Guidance for Pennsylvania*. A substantially higher multiplier would be needed to fully offset habitat impacts.

² Loss of known summer habitat assumes such loss will occur when bats are NOT present (i.e., between October 15 and March 31).

³ For coal mining projects having forest impacts ≥ 40 acres, applicants can either conduct mist-net surveys in accordance with the Service's survey guidelines OR assume presence of Indiana bats. When assuming presence, a seasonal restriction will apply, along with a 0.5:1 compensation ratio for forest impacts. Non-coal projects are evaluated on a case-by-case basis.

⁴ Swarming habitat is suitable habitat in the vicinity of an Indiana bat hibernaculum (generally 10-20 miles). Loss of swarming habitat assumes such loss will occur when bats are NOT present (i.e., between November 15 and March 31).

⁵ Loss of summer and swarming habitat assumes such loss will occur when bats are NOT present (i.e., between October 15 and March 31).

Table 2. Calculation of Deposit when using the Indiana Bat Conservation Fund

| Location of Impact (County) | Compensation Acres (from Table 1) | Cost/Acre ⁶ | IBCF Deposit ⁷ |
|--------------------------------|---|------------------------|---------------------------|
| Adams | | TBD | |
| Armstrong/Butler | | \$2,060 | |
| Beaver/Lawrence | | \$2,320 | |
| Bedford | | TBD | |
| Berks | | TBD | |
| Blair | 187.5 | \$2,285 | \$428,437.50 |
| Centre | | \$3,600 | |
| Fayette | | \$1,519 | |
| Greene | | \$1,223 | |
| Huntingdon | 136.5 | \$3,631 | \$495,631.50 |
| Luzerne | | \$3,716 | |
| Mifflin | | TBD | |
| Pike | | \$8,100 | |
| Somerset | | \$2,247 | |
| Washington | | \$2,760 | |
| York | | TBD | |
| Cambria | 63 | \$1,250 | \$78,750.00 |

* See Table 3 for cost/acre value

NOTE: Deposits to the IBCF are due prior to permit issuance. Provide documentation of the deposit to the USFWS and the permitting agency (e.g., PA DEP). An escrow account has been set up at the following institution to receive IBCF deposits.⁸

First Commonwealth Bank – Trust Division
 Attn: Brenda Alabran
 614 Philadelphia Street
 P.O. Box 698
 Indiana, Pennsylvania 15701
 724-463-6580 (phone)

Designate the deposit for: Indiana Bat Conservation Fund (Acct #710621004)

USFWS Concurrence: Taj Jattanzi Date: 6/22/2016

⁶ Cost/acre subject to change, based on a periodic re-evaluation of land comparable values by the Pennsylvania Game Commission. Cost per acre reflects land cost per acre, plus 20% for expenses associated with land acquisition (e.g., comparable values search, title search, transfer taxes, land survey, recording fees, etc.).

⁷ Multiply the number of Compensation Acres by the Cost/Acre to determine the amount to be submitted to the Indiana Bat Conservation Fund.

⁸ If you choose to set up an escrow account at another institution, do so in coordination with the Pennsylvania Game Commission.



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, Pennsylvania 16801-4850

October 31, 2016

Brad Schaeffer
Tetra Tech
301 Ellicott Street
Buffalo, NY 14203



RE: USFWS Project #2014-0200

Dear Mr. Schaeffer:

Thank you for your email dated October 4, 2016, which provided the Fish and Wildlife Service (Service) with additional information regarding Sunoco Pipeline, L.P., proposed Pennsylvania Pipeline (formerly part of the Sunoco Mariner East 2 Pipeline) project located in Washington, Allegheny, Westmoreland, Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland, York, Dauphin, Lebanon, Lancaster, Berks, Chester, and Delaware counties, Pennsylvania. The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species and the Migratory Bird Treaty Act (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755, as amended) to ensure the protection of migratory bird species. This letter supersedes our correspondence dated September 15, 2016.

The project involves the phased installation of approximately 561 miles of two parallel pipelines within a 306-mile, 50-foot wide right-of-way (ROW) from Houston, Washington County, Pennsylvania to Sunoco Pipeline, L.P.'s (SPLP), Twin Oaks facility in Delaware County, Pennsylvania with the purpose of interconnecting with existing SPLP Mariner East pipelines. As initially described, a 20-inch diameter pipeline would be installed within the ROW from Houston, PA to the Twin Oaks facility (306 miles) and a second, up to 20-inch diameter pipeline, is proposed to be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, Pennsylvania to the Twin Oaks facility, paralleling the initial line for approximately 255 miles.

Federally listed species

Bog Turtle

The project area is within the range of the bog turtle (*Clemmys muhlenbergii*), a species that is federally listed as threatened. The species inhabits shallow, spring-fed fens, sphagnum bogs,

swamps, marshy meadows, and pastures characterized by soft, muddy bottoms; clear, cool, slow-flowing water, often forming a network of rivulets; high humidity; and an open canopy. To determine the potential effects of the proposed project on bog turtles and their habitat, Stan Boder, James Drasher, Kevin Keat, Jason Tesauro, Ben Berra, Andy Brookens, and Logan Zugay conducted Phase 1 bog turtle habitat assessments on all wetlands within 300 feet of the project's proposed limit of disturbance (LOD). According to their reports, 430 wetlands extend to within 300 feet of the proposed LOD within the range of the bog turtle. Following the methods described under "Bog Turtle Habitat Survey" (Phase 1 survey) of the Guidelines for Bog Turtle Surveys (revised April 2006), the surveyors determined that 334 of the subject wetlands do not have the combination of soils, vegetation, and hydrology typical of habitat occupied by bog turtles. We agree with their habitat determination for those wetlands.

Species presence surveys (Phase II surveys) were initiated at 99 wetlands determined by the surveyors to have the combination of habitat characteristics typical of areas occupied by bog turtles. Based on survey results and known bog turtle occurrences, Tetra Tech reported that there are four wetlands within the LOD and four wetlands within 300 feet of the LOD that are occupied by bog turtles (Table 1).

Table 1. Occupied wetlands that will be directly or indirectly affected by the action.

| Wetlands | BT Occupancy | Location |
|----------|--------------|-----------------|
| A54 | Occupied | Within LOD |
| A55 | Occupied | Within LOD |
| AM2 | Occupied | Within LOD |
| AM3 | Occupied | Within 300 feet |
| C6 | Occupied | Within LOD |
| C7 | Occupied | Within 300 feet |
| C8 | Occupied | Within 300 feet |
| C44 | Occupied | Within 300 feet |

To avoid adverse effects to the known bog turtle populations in wetlands A54 and A55 the applicant has proposed the following measures:

1. Drill under Wetlands A54 and A55 using horizontal directional drilling (HDD);
 - a. Prior to performing any construction work in wetlands, streams, or uplands within 300 feet of the potential bog turtle habitat, all areas of expected disturbance must be surveyed by a qualified surveyor for the presence of bog turtles immediately prior to construction commencement.
 - b. Prior to the survey, herbaceous vegetation will be cut to a height of 4 to 6 inches using a hand-held trimmer/weed-cutter, and then carefully raked away from the area to be searched. A qualified bog turtle surveyor will be present when this vegetation clearing occurs.
 - c. Immediately following the survey, silt-fencing will be placed between the wetland and the proposed construction zone while the bog turtle surveyor is present to ensure that the fencing is properly installed in the correct location. The silt-fencing will be removed immediately following construction.

2. Ensure the HDD will be in bedrock prior to drilling beneath the wetlands by utilizing the information provide in geotechnical reports;
3. Implement Service-approved Inadvertent Return Contingency Plan;
4. Install a series of piezometers to monitor groundwater conditions before, during, and after the HDD following a Service-approved monitoring plan.
5. Implement the bog turtle radio-telemetry study protocol (see Appendix A)
6. Implement a Service-approved vibration monitoring plan along the alignment and within the wetlands if HDD activities extend into the bog turtle dormant season.
7. Results of the groundwater condition, vibration activity, and bog turtle activity monitoring will be reported daily to the Service during construction.
8. Post-construction routine pipeline operation and maintenance protective measures:
 - a. "No Mowing" signs will be placed along the boundary of Wetlands A54 and A55 to prevent disturbance during post-construction right-of-way (ROW) maintenance activities;
 - b. Additional signs will be placed at the edge of Zone 2 (300 feet from the wetland edge) to demarcate the limit of herbicide application within the ROW;
 - c. Only hand clearing will occur in Zone 2 and will be conducted between October 1 and March 31.

No take of bog turtles has been authorized through this consultation. If effects to the bog turtle or its habitat are indicated by onsite monitoring, cease all drilling operations and report the incident to the Service immediately. This may necessitate termination of the drill until an incidental take permit is issued.

During an April 6, 2016, field view, Service-biologist Brian Scofield, acknowledged the marginal, but suitable, habitat conditions of Wetland AM2 and recommended a time-of-year restriction or pre-construction survey. The same recommendation was given for Wetlands AM3, C7, C8, and C44 because of their proximity to known bog turtle populations. Therefore, the applicant has proposed that either construction will take place between November 1 and March 31, when bog turtles are hibernating, or a pre-construction survey will be performed if construction occurs between April 1 and October 31, during which time bog turtles are active. If construction takes place during the active season the following measures will be followed.

1. Prior to performing any construction work in wetlands, streams, or uplands within 300 feet of the potential bog turtle habitat, all areas of expected disturbance must be surveyed by a qualified surveyor for the presence of bog turtles immediately prior to construction commencement.
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4. If any bog turtles are located during these searches, the Service and Pennsylvania Fish and Boat Commission (PFBC) will be contacted immediately, and construction will not

proceed until further consultation occurs. Submit survey results to the Service and PFBC.

To avoid the risk of take to the known bog turtle population in Wetland C6 the applicant has proposed the use of a dry-bore to go under the wetland and avoid surface impacts. Because dry-bore technology does not utilize pressurized fluid to bore, there is no risk of an inadvertent return; therefore, the applicant has proposed the same minimization measures as Wetlands AM2, AM3, C7, C8, and C44.

With the implementation of the avoidance and conservation measures listed above and contained in the applicant's April 2016 Bog Turtle Conservation Plan; we anticipate that the effects of this project to bog turtles will be insignificant or discountable. If you are unable to implement all proposed avoidance measures or project plans change, further consultation with the Service will be required, pursuant to the Endangered Species Act.

Indiana bat

The proposed project is located within the range of the Indiana bat (*Myotis sodalis*), a species that is federally listed as endangered. Mist-net surveys were conducted within the appropriate survey windows between May 15, 2014, and August 4, 2015, for Indiana bats. Surveys were carried out only where suitable habitat existed and where those areas occurred outside of already assumed occupied habitats (swarming areas).

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With the aforementioned buffers in place and a successful HDD, this project is not likely to adversely affect these northeastern bulrush populations.

Assessment of Risks to Migratory Birds

The Service received Sunoco's draft Migratory Bird Conservation Plan on July 15, 2016, and provided comments on the plan during our August 10, 2016, meeting. The Service is awaiting Sunoco's final Migratory Bird Conservation Plan.

The Migratory Bird Treaty Act prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the MBTA has no provision for allowing unauthorized take, the FWS recognizes that some birds may be taken during activities such as pipeline construction even if all reasonable measures to avoid take are implemented. The FWS's Office of Law Enforcement carries out its mission to protect migratory birds not only through investigation and enforcement, but also through fostering relationships with individuals and industries that proactively seek to eliminate their impacts on migratory birds. Although it is not possible under the MBTA to absolve individuals, companies, or agencies from liability (even if they implement avian mortality avoidance or similar conservation measures), the Office of Law

Enforcement focuses on those individuals, companies, or agencies that take migratory birds with disregard for their actions and the law, especially when conservation measures have been developed but are not properly implemented.

To avoid potential delays in reviewing your project, please use the above-referenced USFWS project tracking number in any future correspondence regarding this project.

Please contact Pamela Shellenberger or Brian Scofield of this office at (814) 234 4090 if you have any questions or require further assistance regarding this matter.

Sincerely,



Lora Z. Lattanzi
Field Office Supervisor

Enclosure

cc:

Corps – W. Chandler

DEP – A. McDonald

PGC – Librandi Mumma

PGC – Bell

PFBC – Smiles

Appendix A

SUNOCO PIPELINE, L.P. – PENNSYLVANIA PIPELINE PROJECT (PPP) RADIO-TELEMETRY STUDY PROTOCOL FOR BOG TURTLE MONITORING ASSOCIATED WITH THE HORIZONTAL DIRECTIONAL DRILL (HDD) AT WETLANDS A54 AND A55 IN LANCASTER COUNTY, PENNSYLVANIA

Project Objective

The objective of the bog turtle radio-telemetry study for the Sunoco Pipeline, L.P. - PPP is to document the usage of portions of wetlands A54 and A55 by known populations of bog turtles and to monitor the effects of the proposed HDD in wetlands A54 and A55 on these populations. This radio-telemetry study will occur during all phases of the project (pre-construction, during construction, and post-construction) within wetlands A54 and A55. This study will collect baseline data to identify where bog turtles are overwintering (in hibernacula areas), and determine if any activities associated with the proposed HDD have an effect on the species.

Approximate time line of events concerning radio-tracking are as follows:

Between September 18 and October 15, 2016, Skelly and Loy will conduct up to 8 days of bog turtle Phase 2 surveys in order to capture approximately 10 appropriately sized bog turtles in wetland A54, and approximately 10 appropriately sized bog turtles in wetland A55 to be fitted with transmitters. A total of 20 bog turtles fitted with transmitters is the goal for this telemetry study.

Skelly and Loy will deploy at least 20 bog turtle traps in wetlands A54 and A55. These traps will assist in expediting the capture of bog turtles suitable for the placement of transmitters. The traps will be used for at least 10 consecutive days, or at least until 10 bog turtles have been fitted with transmitters. Traps will be checked daily while they are deployed in Wetlands A54 and A55.

- All healthy adult bog turtles (with a target goal of 10 in each wetland) of suitable size captured during these surveys will be fitted with transmitters equipped with batteries that will have approximately 9 months of service life. An equal number of males and females will be fitted with transmitters to the extent practical. Should Phase 2 and Phase 3 surveys during the fall, 2016, determine the populations in wetlands A54 and A55 are lower than anticipated, the number of bog turtles fitted with transmitters may be less than 10 in each wetland.

During the pre-construction time period, bog turtles fitted with transmitters will be tracked twice a week to monitor bog turtle activity, identify fall travel patterns,

and determine the locations of over-wintering sites. All bog turtle locations will be recorded via GPS technology (sub-meter accuracy) and mapped accordingly. Bog turtles may be periodically checked (handled) during this time period if no movement has been observed since the previous field tracking and to ensure proper attachment of the transmitter. The pre-construction time period will be approximately 4 weeks.

During the active construction time period (when the HDD is ongoing) bog turtles fitted with transmitters will be tracked at least every other day while the drilling is active to monitor bog turtle activity and determine/confirm the usage of over-wintering sites. All locations will be recorded via GPS technology (sub-meter accuracy) and mapped accordingly. No bog turtles will be handled or disturbed by the biologist tracking the turtles during this time period.

During the early post-construction time period bog turtles fitted with transmitters will be tracked twice a week to monitor bog turtle activity and determine/confirm the usage of over-wintering sites. All locations will be recorded via GPS technology (sub-meter accuracy) and mapped accordingly. No bog turtles will be handled or disturbed by the biologist tracking the turtles during this time period. The early post-construction time period will last 4 weeks.

All bog turtles fitted with transmitters will continue to be tracked and mapped at least 1 time per month until April 2017, at which time they will be captured and have their transmitters removed.

Bog turtles fitted with transmitters will be minimally handled during the study, and in any event, will be returned to their location of capture as soon as possible.

Data Collection and Reporting

During the telemetry study, data collected during our field efforts will include a general weather description, ambient air temperature and humidity, soil temperature, water temperature, wind speed, and cloud cover. Additionally, the location of the bog turtles via Global Positioning System (GPS) Technology with sub-meter accuracy will be recorded and mapped during all telemetry field efforts. Bog turtles captured during our study will be processed and vital physical data (weight, length, etc.) will be recorded upon initial capture to determine if they are to be fitted with a transmitter. Only healthy adult bog turtles will be fitted with transmitters and will be marked via notching of marginal scutes for identification purposes. Juveniles or small adults that are captured during the initial survey effort will be marked via notching on marginal scutes for identification purposes. Juveniles and small adults will also be processed and documented, weather data and location will be recorded, and then will be released at their location of capture.

Adults bog turtles fitted with transmitters will be processed and documented during the transmitter removal process in April 2017. Bog turtles not fitted with transmitters that are encountered incidentally during our field monitoring efforts will be noted, measured, notched and released. Bog turtles may be periodically checked (handled) during the active-season (April

1 – October 31) if no movement has been observed since the previous field check and to ensure proper attachment of the transmitter.

All bog turtles found over the duration of the telemetry study will be photographed and reported to the USFWS and PFBC via email, as required for Qualified Bog Turtle Surveyors (QBTS). Periodic status reports will be submitted to the USFWS throughout the study period, and a final summary report with mapping figures, photographs, etc. will be provided to the USFWS.

In addition, the following reporting protocols will be followed dependent upon bog turtle movements and observations:

- The USFWS/PFBC will be provided a map showing the location of the hibernating turtles, once all are hibernating.
- Any large movements of over 15 feet from the original hibernation location after November 1 and before April 1 or any surface observations during this time period will be immediately reported to the USFWS/PFBC if movement or surfacing cannot be dismissed due to unseasonably warm weather.
- Any mortalities will result in drill stoppage and immediate reporting to the USFWS.

Tracking Equipment and Methods

Transmitter

The transmitter, model SOPR-2190, is designed by Wildlife Materials, Inc., and has been used extensively by researchers in Pennsylvania for bog turtle telemetry studies. This time-proven transmitter is a newer variation of the SOPB transmitter and incorporates a slight curvature into the transmitter to conform better to a bog turtle's carapace. The transmitter has been constructed by the manufacturer to be waterproof and will be used due to its relatively long shelf life and activity (service) life in combination with a very light weight. Transmitters are equipped with an on/off switch (activated by a magnet) which can be removed immediately prior to placement on a bog turtle. Each transmitter weighs less than 5 grams, and in combination with an epoxy adhesive, will total no more than 8% (typically 10 grams or less) of an individual bog turtle's weight. The transmitters being built for this study will employ a 15 cm antenna which is 25% smaller than the standard size for this model. Skelly and Loy worked with the manufacturer to ensure the smaller antenna will provide ample signal strength while still providing the necessary service life. The average length of time a transmitter lasts depends on the current drain of its battery. Skelly and Loy intends to use transmitters with batteries that typically function for at least 7 to 9 months, according to the manufacturer's specification and technical advisors. Personal communications with researchers using similar transmitters and Skelly and Loy's experience using the same transmitters confirm the expected transmitter service life.

Receiver

The receiver (radio-tracking device) is designed by Wildlife Materials, Inc., and will be custom built to pick up individual signals from 150.000 to 150.480 megahertz. The model will be a TRX-48S which is capable of tracking the number of bog turtles prescribed by this investigation. This receiver will utilize a Yagi, 3 element, folding directional antenna.

Adhesive

The adhesive that Skelly and Loy intends to use is a waterproof plumber's putty manufactured by Master Plumber that is distributed by True Value Hardware. The adhesive dries in approximately 20 minutes and was selected due to its ability to maintain a highly adhesive quality as well as its low-heat setting temperature. This adhesive was used by Skelly and Loy staff members during a several year telemetry study for bog turtles in Berks County, by The Nature Conservancy (TNC) in a bog telemetry study at a preserve in Lancaster County, by TNC in a multi-year bog turtle telemetry study in Monroe County, and most recently by Skelly and Loy in a multi-year bog turtle telemetry study in Chester County. Skelly and Loy also successfully used this product to repair/replace approximately 20% of the carapace of a bog turtle that had been severely injured/damaged. This emergency repair was made at the request of the PFBC and two years after the repair, this bog turtle was observed in good health and was still being protected by the epoxy section of artificial shell.

Due to some concern over heat being generated by the epoxy adhesive during hardening, Ms. Teresa Amitrone (formerly of Skelly and Loy) tested the product for temperature in ten trials. In each of the trials, 10 one-inch balls of the adhesive were prepared. A piece of plastic wrap was placed around the balls so that a thermometer could be inserted into the adhesive without sticking to it. An average high temperature of 37.0° C was recorded during this trial. It should be noted that 37.0° C converts to 98.6° F, the average temperature of the human body. It was determined that the adhesive generated no more heat than that of a human hand. Thus it was concluded that no unnecessary stress was placed on bog turtles as a result of high temperatures associated with the adhesive material during transmitter placement. No bog turtles that have been fitted with transmitters by Skelly and Loy have ever been noticeably stressed or harmed as a result of this application method.

Skelly and Loy prefers this adhesive because it does not require the bog turtle to be removed from its location of capture for any extended period of time. Furthermore, if other slower setting epoxy adhesives were used, the bog turtle would have to be removed from the wetland and held off-site overnight for the adhesive to thoroughly cure. By using this adhesive, the added stress of being removed from the wetland for a long period of time can be avoided.

A clear coat of epoxy (Loc-tite 5 minute epoxy) will be used to cover the transmitter and hardened epoxy putty adhesive. This 2-part, clear coat epoxy will be mixed in a cup and then applied with a cotton swab over the affixed transmitter/epoxy putty to provide additional waterproofing and protection of the transmitter's adhesion to the carapace.

Attachment Method

Once a bog turtle is captured and it is determined to be of suitable size (typically 120 grams or more) and in good health, data (measurements, sex, age approximation, etc.) will be collected on the individual and marginal scutes will be notched (if not previously notched) for identification purposes. Before attaching the transmitter, a small wire brush and a small nylon brush will be used to thoroughly clean the carapace in the area where the transmitter will be attached (see attached photograph for preferred transmitter location). The area, once scrubbed clean, will be washed with water from a spray bottle. Once the cleaned area is completely dry, the transmitter to be attached will be turned on and checked with the receiver to ensure proper working condition.

The two-part plumbers putty will then be mixed/kneaded to activate the adhesive qualities of the product. Once kneaded for approximately 1 minute the mixed putty will generate heat, become adhesive (sticky), and allow for up to 2 minutes of working time to ensure the optimal adhesion. A small, oblong ball will be made by rolling the piece of epoxy putty between fingers and then placed on the back of the carapace (left/back). The transmitter will then be pressed into the epoxy putty and the epoxy putty will be formed/pressed around the sides of the transmitter. As the epoxy putty begins to set, a small blade will be utilized to scrape the excess epoxy putty off the bog turtle and transmitter. The bog turtle will be frequently weighed during this time period to ensure the "8% of total body weight" limit is not exceeded.

The bog turtle will be contained in a dry, shaded container while the epoxy putty dries and sets hard enough that no mark is made using a fingernail. Once hardened, the transmitter and epoxy putty will be covered with a clear coat epoxy (Loc-tite 5 minute epoxy) using a cotton swab. This provides an additional layer of protection to the adhesive characteristics of the transmitter to the carapace.

Risks of Long-Term Use of Transmitters on Bog Turtles

Skelly and Loy staff members have had lengthy conversations and extensive field experience/training with individuals who are considered bog turtle experts and have extensive experience with telemetry studies (Scott Smith – Maryland Department of Natural Resources; George Gress – TNC; Teresa Amitrone – Liberty Environmental; etc.). These scientists are all actively researching bog turtles and all have been or are currently involved with radio telemetry with the genus *Clemmys/Glyptemys*. Based on information provided by these researchers and based on our previous telemetry experience, Skelly and Loy is unaware of risks to bog turtles by telemetry studies that would pose a significant risk to individual bog turtles or the overall health of the population in the project area.

Additional Precautions and Safety Measures

Skelly and Loy will follow all currently accepted decontamination protocols during their telemetry study. These protocols will ensure that researchers and bog turtle populations will not be exposed to harmful viruses or bacteria. Standard decontamination practices will be applied when entering and exiting wetland A54 and A55, and should ensure researchers and their

equipment do not spread diseases which could be harmful to the bog turtle. Researchers will also follow standard decontamination practices to ensure their health and safety, as well.

Telemetry Study Team

Skelly and Loy will employ a team approach to ensure a successful telemetry study. The Skelly and Loy team will consist of Ben Berra, Andy Brookens, and Logan Zugay (all recognized/qualified bog turtle surveyors), as well as Dylan Woodworth. Mr. Berra, Mr. Brookens, and Mr. Zugay have gained extensive experience with all aspects of telemetry research for bog turtles through their participation in multiple studies (including PennDOT, TNC, and MD DNR studies). The Skelly and Loy team will be present during the initial surveys for bog turtles and for the attachment of all transmitters to suitable bog turtles.

Photograph below shows approximate location where transmitters will be located on suitable bog turtles

