

National Park Service

U.S. Department of the Interior

Appalachian National Scenic Trail
Delaware Water Gap National Recreation Area
Middle Delaware National Scenic and Recreational River



**FINAL BIOLOGICAL ASSESSMENT FOR
INDIANA BAT (*MYOTIS SODALIS*) AND
BOG TURTLE (*GLYPTHEMYS MUHLENBERGII*)**

**SUSQUEHANNA TO ROSELAND 500 kV TRANSMISSION
RIGHT-OF-WAY AND SPECIAL USE PERMIT**

ENVIRONMENTAL IMPACT STATEMENT

MAY 2012



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ACRONYMS AND ABBREVIATIONS

APPA	Appalachian National Scenic Trail
BA	biological assessment
B-K Line	Bushkill to Kittatinny Line
DEWA	Delaware Water Gap National Recreation Area
DBH	diameter at breast height
ESA	Endangered Species Act of 1973
EIS	environmental impact statement
kV	kilovolt
MDSR	Middle Delaware National Scenic and Recreational River
NERC	North American Electric Reliability Corporation
NJDEP	New Jersey Department of the Environmental Protection
NPS	National Park Service
PFBC	Pennsylvania Fish and Boat Commission
PEM	palustrine emergent wetlands
PSS	palustrine scrub shrub
PFO	palustrine forested wetlands
PPL	PPL Electric Utilities Corporation
PSE&G	Public Service Electric and Gas Company
ROW	right-of-way
S-R Line	Transmission Line Upgrade and Expansion from Susquehanna, Pennsylvania, to Roseland, New Jersey
USFWS	U.S. Fish and Wildlife Service
USFWS-NJFO	U.S. Fish and Wildlife Service -New Jersey Field Office
USFWS-PFO	U.S. Fish and Wildlife Service -Pennsylvania Field Office
WNS	white-nose syndrome

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

A consortium of utilities, consisting of PPL Electric Utilities Corporation (PPL) and Public Service Electric and Gas Company (PSE&G), jointly known as the applicant, propose to construct a 500,000-volt (500-kilovolt [kV]) transmission line from the Susquehanna Substation (Berwick, Pennsylvania) to the Roseland Substation (Roseland, New Jersey) (the S-R Line). The proposed transmission line would cross Delaware Water Gap National Recreation Area (DEWA), Middle Delaware National Scenic and Recreational River (MDSR), and Appalachian National Scenic Trail (APPA) in Pennsylvania and New Jersey. The purpose of the proposed action is to respond to the applicant's expressed request to construct a double-500kV power line across three units of the national park system, in light of the purposes and resources of the affected units of the national park system, as expressed in statutes, regulations, and policies. The applicant has applied for construction and right-of-way (ROW) permits for the crossings of these parks. The federal action under consideration for this Environmental Impact Statement (EIS) is granting or denying the applicant's proposal by issuing, issuing with necessary terms and conditions, or not issuing the requested construction and ROW permits. Consultation during the development of the EIS determined that there is potential for the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened bog turtle (*Glyptemys muhlenbergii*) to occur inside the study area within the boundaries of the parks. The potential presence of Indiana bat and bog turtle, protected under the Endangered Species Act of 1973, as amended (ESA), requires a Biological Assessment (BA).

1.2 PURPOSE

The purpose of this BA is to review the preferred alternative in sufficient detail to determine the potential effects of the proposed action on the federally protected Indiana bat and bog turtle and their habitats in compliance with Section 7 of the ESA. This BA is prepared to ensure that the preferred alternative would not threaten the potential for the existence of the Indiana bat and bog turtle within National Park Service (NPS) boundaries.

1.3 PREFERRED ALTERNATIVE

Alternative 2, the applicant's proposed alternative, has been chosen as the NPS preferred alternative. This BA evaluates the potential impacts to the Indiana bat and bog turtle that would result from the implementation of alternative 2.

1.4 AFFECTED SPECIES

1.4.1 Indiana Bat (*Myotis sodalis*)

The Indiana bat was listed as an endangered species in 1967 and is protected under the ESA. Indiana bats are found in low numbers throughout the eastern United States with an estimated population of 468,260 in 2007 (USFWS 2009). The U.S. Fish and Wildlife Service (USFWS) estimates about 1,000 Indiana bats reside in Pennsylvania (Butchkoski 2010). Indiana bats hibernate during the winter in caves, old mines, and tunnels with temperatures below 50° Fahrenheit but above freezing. During the summer Indiana bats roost in trees that are exposed to direct sunlight and close to a source of water. Reproductive females form small colonies under loose bark. Males also seek loose bark or cavities for summer habitats (Butchkoski 2010).

1.4.2 Bog Turtle (*Glyptemys muhlenbergii*)

The bog turtle is one of the smallest turtles in North America and is separated taxonomically into two geographically distinct populations. The northern population, which is the population considered in this BA, ranges from Massachusetts to Maryland and was listed as a threatened species on November 4, 1997. The bog turtle occupies wetland habitat that is often found as transitional strips between drier upland areas and more thickly vegetated, wetter, wooded swamp or marsh. Unlike other turtle species, the bog turtle's home range is small, and the turtles rarely leave the marsh to forage in upland areas. In a survey of 200 colonies, most habitat areas were found to be less than two acres (EcolSciences 2010). As a result, the bog turtle is highly susceptible to habitat loss, degradation, and fragmentation. Bog turtles were formerly known to occur in 18 counties in New Jersey and 17 in Pennsylvania; they now are found in 13 counties in New Jersey and 15 in Pennsylvania. Most are found within the Delaware and Susquehanna River watersheds (USFWS 2001).

CHAPTER 2: PROJECT BACKGROUND AND ALTERNATIVES

2.1 PROJECT DESCRIPTION

The applicant's proposal, alternative 2, would include the construction of a double-circuit 500-kV transmission line consisting of new towers, conductors, and associated telecommunications infrastructure that would cross NPS lands within DEWA, MDSR, and APPA. Because alternative 2 would cross three units of the national park system, NPS permits would be required. The NPS cannot require the applicant to follow a certain route outside of the boundaries of NPS lands; therefore, the scope of the BA is limited to the portion of the route within the NPS boundaries.

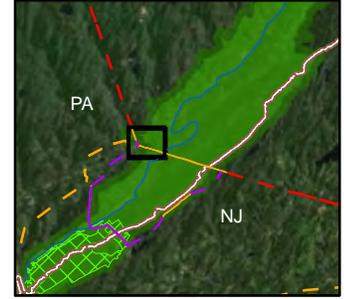
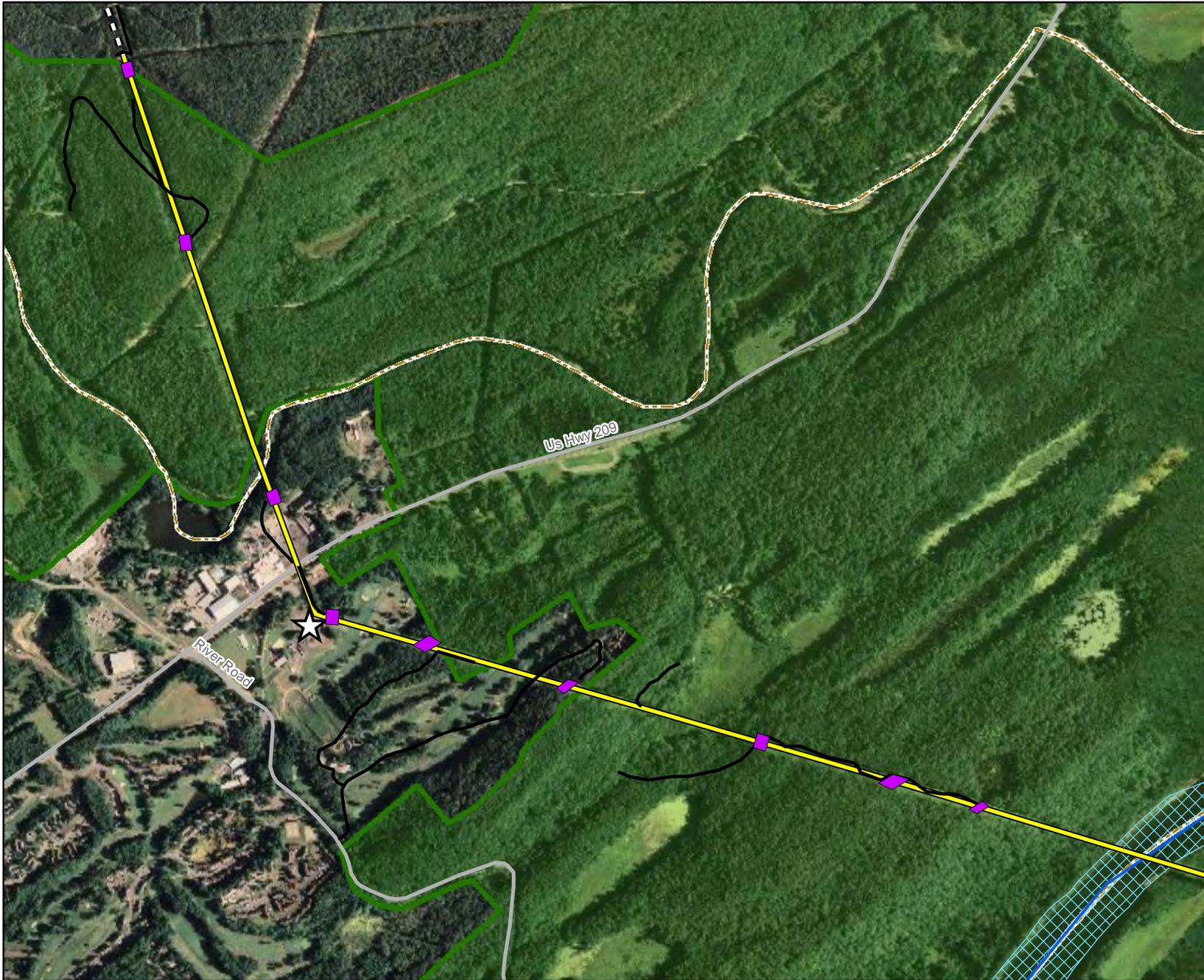
2.2 ALTERNATIVE 2 DESCRIPTION

Alternative 2 would follow the corridor of an existing transmission line, the 230-kV Bushkill to Kittatinny Line (B-K Line) that traverses approximately 4.3 miles of DEWA. Within DEWA boundaries, the route also crosses MDSR and APPA. Figures 1 and 2 present the route of the alternative 2 alignment inside DEWA within Pennsylvania and New Jersey, respectively. The figures include the study area, access roads and the proposed tower locations.

The alignment would enter DEWA from the west in Pennsylvania approximately 0.25 mile east of Big Bushkill Creek. The alignment would cross approximately 0.6 mile of DEWA land and then exit the park. In the next approximately 0.68-mile section of the study area, the alignment would travel to the Bushkill Substation, cross a small (0.06-mile) portion of DEWA, cross the Fernwood Golf Course, and then re-enter DEWA south of the South Zone Ranger Station and north of DEWA Headquarters. The alignment would travel southeast within DEWA for approximately 0.85 mile, then cross 0.10 mile of MDSR just north of Depew Island. The route would enter New Jersey as it crosses the Delaware River and continue southeast approximately 2.4 miles past the Watergate Recreation Site and across APPA. The route would then traverse another 0.25 mile from APPA to the eastern DEWA boundary.

2.3 CLEARING AND CONSTRUCTION

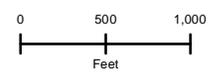
Alternative 2 would require clearing vegetation for an additional 50 to 200 feet of ROW (table 1). Within the ROW, low-impact tree clearing is the preferred method. Low-impact tree clearing involves directional tree felling, both mechanically and by hand. A professionally created harvesting contract would provide specific regulations for clearing, which would aid in protection of cultural resources, wetland and stream areas, and overall residual quality of the site. A professional forester would be hired to oversee the project. Tree-clearing contractors experienced in low-impact tree clearing would be used. Equipment used to minimize impacts would include forwarders, feller bunchers, cable and grapple skidders, high-flotation tires, portable bridges, and temporary culverts. Skidding of trees along the ground would be limited to areas with low erosion potential, and a forwarder would be used in sensitive soil conditions. Days of operation would be limited to those days with suitable ground conditions. Additionally, trees would be cut close to the ground, and stumps and root systems would be left in place to provide additional soil stability. A 50-foot buffer would be used near intermittent streams and wetlands and a 100-foot buffer near perennial streams. All vegetation would be removed from access roads and in work areas (wire pulling locations, vegetation disposal areas, and structure erection areas).

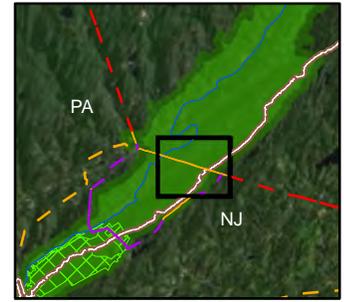
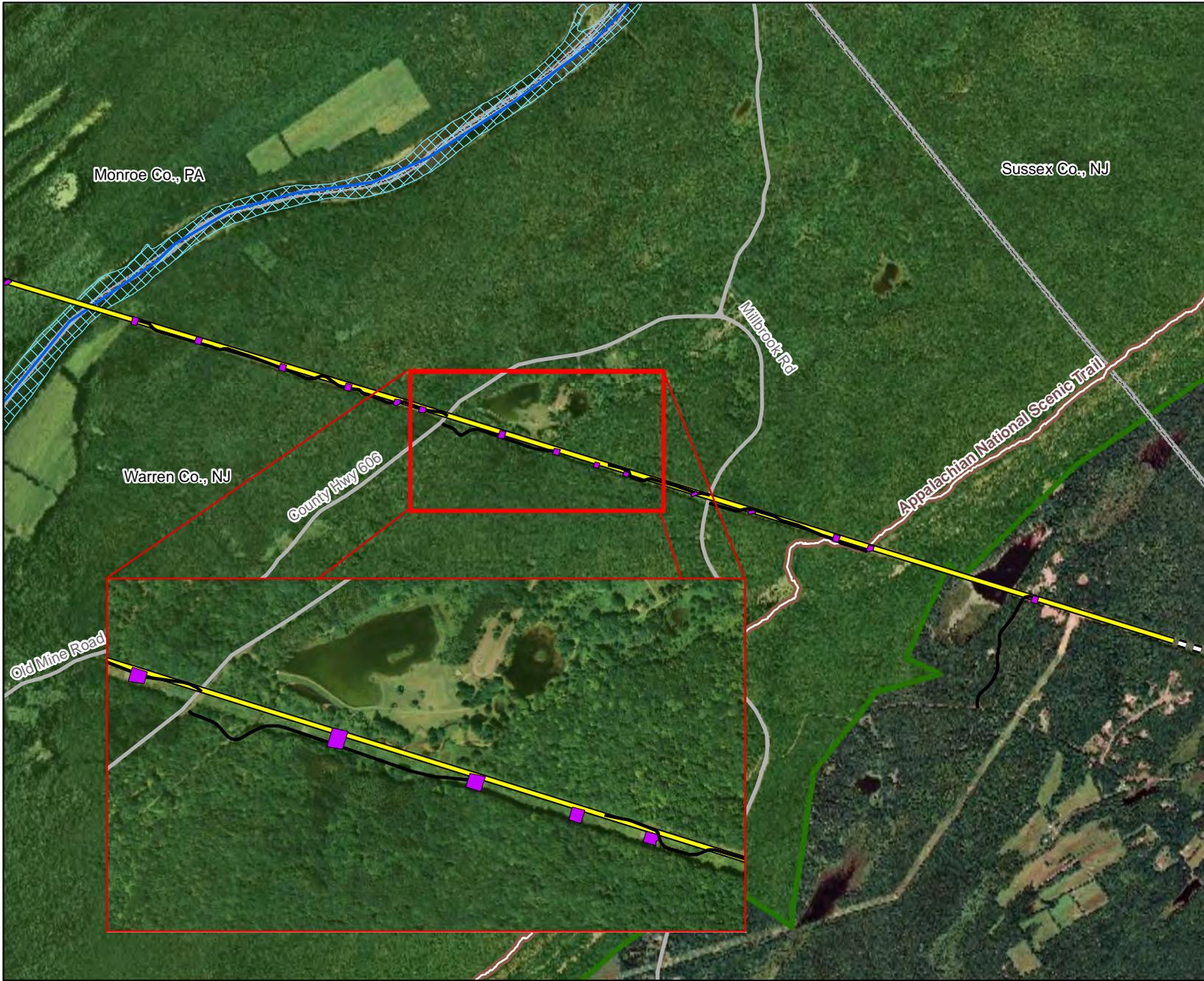


Legend

- ☆ Substation
- Crane Pad/ Tower Location
- Inside Study Area
- ≡ Outside Study Area
- Appalachian National Scenic Trail
- Delaware River
- Proposed Access Road
- Road
- Delaware Water Gap
- National Recreation Area
- Middle Delaware National Scenic and Recreational River
- County Line

	<p>Susquehanna to Roseland Transmission Line Proposal and Right-of-Way Request EIS</p>	<p>Figure 1 Alternative 2 in Pennsylvania</p>	<p>Source: ESRI Streetmap 2006, Penn State 2010, ESRI ArcGISonline Map Service 2010, PennDOT 2011, USGS 2006, NJ DEP 2008, NWI 1977</p> <p>Projection: NAD 83 UTM Zone 18N Date: April, 2012</p>	
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Legend

- Crane Pad/ Tower Location
- Inside Study Area
- Outside Study Area
- Appalachian National Scenic Trail
- Delaware River
- Proposed New Access Road
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- Delaware Water Gap National Recreation Area
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- County Line

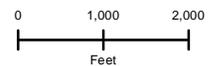


Susquehanna to Roseland
Transmission Line Proposal
and
Right-of-Way Request EIS

Figure 2
Alternative 2 in New Jersey

Source: ESRI Streetmap 2006, Penn State 2010,
ESRI ArcGISonline Map Service 2010,
PennDOT 2011, USGS 2006,
NJ DEP 2008, NWI 1977

Projection: NAD 83 UTM Zone 18N
Date: April, 2012



Clearing would be selective, and efforts to preserve native or compatible species would be made to the greatest extent possible. Species of trees recognized as being fast-growing species would be cut to ground level. Additionally, trees within the ROW that would violate the wire security zone either would be removed or would be pruned to create additional space for growth until scheduled maintenance. Cleared salable timber would be removed from the ROW and placed in neat piles at an NPS-designated site to be determined before construction. Timber would be the property of the United States. Other timber would be placed in tree-length piles away from preserved compatible vegetation. These piles would not be placed on access roads, streams, or trails, or in areas where piles would be highly visible from an improved road. Interspersed with these timber piles, slash piles would be stacked in flattened mounds on the edge of the ROW. Slash piles would also not be built where highly visible from improved roads or other locations with high visibility. Slash piles would not be placed near tower or pole sites. Cleared vegetation could also be chipped and scattered on the ROW. The NPS would not allow vegetation burning within the boundaries of the parks. Additionally, no vegetation disposal would occur within known or suspected wetland areas, and all timber piles, slash piles, and other cleared vegetation would be hauled away. After construction, the disturbed areas would be seeded with an NPS-approved conservation seed mix.

Alternative 2 would require new access roads, because old trails and roadbeds on which the access roads would be based are overgrown and would not allow access by large vehicles. Old trails and roadbeds would be cleared of vegetation; blade-graded to remove potholes, ruts, and other surface irregularities; and re-compacted to provide a smooth and dense surface capable of supporting heavy equipment. Proposed access road locations are shown in figures 1 and 2. The new access roads would be 20 feet wide to accommodate large construction vehicles. Generally, access roads would fall within the transmission line ROW, but in some instances, it would be necessary for access roads to extend outside the ROW. Alternative 2 would require a total of 5.3 miles of access roads, 1.9 miles of which would be outside the ROW. Acreages of disturbance due to access roads during and after construction are shown in table 1.

After construction, the roads would be narrowed to 15 feet and maintained permanently for future maintenance and vegetation management. The disturbed areas would be seeded with an NPS-approved conservation seed mix. Drainage structures (e.g., wet crossings, water bars, oversize drains, pipe culverts, energy dissipaters) would be installed along spur and access roads to allow for construction equipment use, as well as to prevent erosion from uncontrolled water flow. Slides, washouts, and other slope failures would be repaired and stabilized along roads by installing retaining walls or other means to prevent future failures. The type of mechanically stabilized earth-retaining structure used would be based on site-specific conditions. The applicant would be responsible for the long-term maintenance of access roads within the road and transmission line ROWs.

New spur roads may be required for pulling and splicing sites along the ROW. To minimize land disturbance, previously disturbed areas would be used where feasible. Locations of spur roads are currently unknown and would be placed according to the applicant's internal policy, subject to approval from the NPS. The applicant would be responsible for the restoration of spur roads immediately following the conclusion of construction activities. Restoration of spur roads would include removing all gravel, disposing of geotextile fabric, and seeding the area with an NPS-approved conservation seed mix.

2.4 OPERATION AND MAINTENANCE

No actions would occur during operation of the proposed S-R Line except for occasional maintenance as described below.

2.4.1 Facility Operations and Maintenance

Operation and maintenance of the S-R Line under alternative 2 would involve periodic inspection via helicopter and truck. Maintenance of the S-R Line would be performed on an as-needed basis, but is expected to occur at least once annually, and would include maintenance of access roads and erosion/drainage control structures.

Telecommunications infrastructure would be co-located on the transmission line and would be operated and maintained by the applicant's technicians. Preventive maintenance of telecommunications infrastructure would typically be scheduled every 6 months to ensure system reliability and performance with NPS approval.

2.4.2 Vegetation Management

PPL and PSE&G have separate vegetation management plans because they are distinct utility companies working in two different states. However, both companies must comply with the regulations issued in April 2006 in North American Electric Reliability Corporation Standard FAC-003-01. The NPS considers the applicant's current vegetation management plans, as described in the following paragraphs, to be insufficient, and the NPS will require a NPS-specific, NPS-approved vegetation management plan.

PPL has produced guidelines, *Specification for Initial Clearing and Control Maintenance of Vegetation on or adjacent to Electric Line Right-of-Way through Use of Herbicides, Mechanical, and Hand-clearing Techniques* (PPL 2010) and *Transmission Vegetation Management Program* (PPL 2011), which specify the wire zone–border zone technique of vegetation management. The wire zone is defined as 10 feet out from the centerline to the conductors. Vegetation that is near the wire zone presents a greater threat to the line; vegetation that grows into or falls onto the transmission lines could cause an outage. Within this zone, all native shrubs, grasses, herbaceous species, and low-growing shrubs would be preserved to the greatest extent possible during maintenance; however tree species would be removed if not compatible. The border zone stretches from the edge of the wire zone to the edge of the ROW. Vegetation allowed in the border zone can be more varied in height and is inclusive of small trees. Maintenance would include removal by cutting, pruning, and use of herbicides in some cases, with prior approval. All vegetation would be removed from access roads. In addition, danger trees outside the proposed ROW would also be pruned or removed. Danger trees are those that, in falling, would either strike the conductor or pass within the minimum conductor clearance, which is 10 feet for 500-kV transmission lines (PPL 2010; PPL 2011). Under PPL's vegetation management guidelines, vegetation would also be cleared within a 15-foot perimeter of towers, or adjacent to any structure.

The vegetation management practices employed in New Jersey by PSE&G are described in *Transmission Rights-of-Way Vegetation Management* (PSE&G 2009; PSE&G 2011). Vegetation management under PSE&G guidelines requires a 50-foot buffer beyond the structure foundation perimeter and the minimum clearance required between conductors and the nearest tree is 30 feet. Vegetation maintenance would be achieved by ground line maintenance and selective tree removal. Ground line maintenance requires all trees and shrubs to be cut to ground level or no more than 3 inches above ground level. Selective tree removal requires that all fast-growing tree species be cut to ground level; these species include white pine and tulip poplar, as well as species of ash and birch. Additionally, all dead, decayed, or dying trees would be removed. Danger trees would be identified and removed or pruned. Herbaceous plants and grasses and low-growing shrubs would be allowed to remain (PSE&G 2009; PSE&G 2011). It is assumed that under alternative 2, vegetation maintenance would require the periodic removal of larger individual trees outside the ROW.

TABLE 1: ELEMENTS OF THE ALTERNATIVES

Alternative Element	Alternative 2		
Route description inside the study area	The alternative 2 alignment would cross a total of 4.3 miles of NPS lands. The route would enter DEWA from Pennsylvania roughly 0.25 mile east of Big Bushkill Creek. The alignment would exit the park, travel across a developed area including Fernwood Golf Course, and reenter DEWA south of the South Zone Ranger Station and north of DEWA Headquarters, crossing MDSR just north of Depew Island. The route would continue southeast past the Watergate Recreation Site and across APPA to the eastern DEWA boundary. There would be no new crossing at APPA or MDSR.		
Total ROW expansion/conductor capacity	50–200 feet; 2 new 500 kV		
Removal of B-K Line from Bushkill Substation to the eastern DEWA boundary	Existing infrastructure would be removed and replaced by the new proposed double 500-kV towers		
Construction cost/Schedule	\$2.17 billion; approximately 8 months		
Additional staffing needs for the NPS	2–3 new DEWA/MDSR staff members		
Total Miles/Miles within the study area	147; 5.6 miles, 4.3 miles of which would be on NPS lands		
Numbers of towers and tower foundations inside the study area	26- <i>6 new towers/tower foundations per mile. Typically, the foundation depth will range between 15 and 30 feet with a diameter of 6 to 9 feet.</i>		
Crane pads inside the study area	23- Crane pads would be 100×100 feet, and would be used to set up a crane to erect the structures. Crane pads would be required at each tower location.		
Wire pulls inside the study area ^a	5–6- <i>Wire pulling locations would be 200 feet x 200 feet and placed approximately every mile along the ROW.</i>		
Pulling and splicing sites inside study area	2- <i>On average, pulling and splicing equipment setups require an area of 400 feet x 600 feet outside the ROW where angles occur; two sites are needed per angle.</i>		
Staging area for the entire line ^b	70 acres- Staging of all equipment/materials for work in DEWA would be located on currently cleared ROW.^a		
Access roads inside the study area	Total: 5.3 miles (inside ROW: 3.4 miles, outside ROW: 1.9 miles)	Construction phase Total: 12.8 acres (inside ROW: 8.3 acres, outside ROW: 4.5 acres)	Postconstruction phase Total: 9.6 acres (inside ROW: 6.2 acres, outside ROW: 3.4 acres)
	Access roads would be 20 feet wide during construction and would be reduced to and maintained at 15 feet after construction. The 15-foot-wide access roads would be permanent. Time to return to present conditions: 50 years or perhaps never.		
Note: Items in bold are conditions presented in the applicant’s proposed plan (PPL and PSE&G 2008). Items in <i>italics</i> are presented in chapter 2 of the EIS. These elements were provided where details were absent from the applicant’s proposed plan (PPL and PSE&G 2008) and were based on industry standards.			
a. The number of wire pulls was estimated based on the assumption that helicopters would not be used to string the conductor. This presents the most conservative estimate; however, impacts would be reduced if helicopters were used for stringing the conductors.			
b. Staging area acreage is an estimate based on the length of the line from Susquehanna to Roseland. The applicant’s proposed plan states that all equipment and materials would be staged within the currently cleared ROW. The NPS does not agree. Where staging areas extend beyond the cleared ROW, the NPS would require the applicant to construct the staging areas outside NPS lands.			

CHAPTER 3: AGENCY CONSULTATION

3.1 DISCUSSIONS BETWEEN THE APPLICANT AND USFWS

During 2008 through 2009, discussions with the USFWS were initiated by PPL for alternative 2 in Pennsylvania. Concurrently, PSE&G and USFWS discussed the portion of the proposed S-R Line in New Jersey. During this discussion, both the Pennsylvania and New Jersey USFWS field offices identified the Indiana bat and the bog turtle as federally-listed species that could be potentially affected by the proposed project. NPS was invited to and attended the meetings, which included a discussion of bog turtles but not Indiana bats. The NPS was involved in these discussions; however, because they were not initiated by NPS as part of the consultation process, the meetings are not considered as consultation within the purview of this BA, but they do provide useful information. The prior history of discussions between the applicant and the USFWS field offices are summarized below.

3.1.1 Indiana Bat

The USFWS Pennsylvania Field Office (USFWS-PFO), in a letter dated October 16, 2008, recommended a bat survey of the project area using USFWS guidelines (USFWS 2008a). USFWS-New Jersey Field Office (USFWS-NJFO) in their letter of March 17, 2008 provided preliminary recommendations to protect Indiana bat and stated that it may request a bat survey within the project area in NJ (USFWS 2008b).

Mist netting and investigations of mine portals within Monroe, Pike, Wayne and Lackawanna counties in Pennsylvania and Warren County, New Jersey along alternative 2 and access roads for the S-R Line were conducted in May, June, July, and August 2009 by Sanders Environmental, Inc. These investigations included NPS lands along alternative 2. Potential hibernacula for Indiana bats were found at mine portals and deployment of harp traps at the mine portals captured thirteen bats of two species; however, none of the bats were Indiana bats. Mist netting was also conducted at 136 mist net sites along alternative 2. Mist net surveys resulted in capturing 665 bats of eight species; however, no Indiana bats were captured during the efforts (Sanders 2009).

After surveys were completed in the summer of 2009, Sanders Environmental, Inc. concluded that the proposed project was unlikely to adversely affect the Indiana bat (2009). USFWS-PFO determined in a letter dated January 27, 2010 that after review of the survey report, alternative 2 was not likely to adversely affect Indiana bat assuming the implementation of proposed protection and mitigation measures (USFWS 2010a). An additional letter was sent to the applicant from the USFWS-PFO on 17 April 2012 providing an update to the 27 January 2010 letter. The letter notes that all known direct impacts to Indiana bats would occur outside of the DEWA (USFWS 2012a).

An agency response letter from the USFWS-NJFO to the applicant was received on June 11, 2010 (USFWS 2010b). ***However, this letter addressed only the eastern segment of alternative 2 within New Jersey, between Hopatcong and Roseland, well are outside of NPS boundaries.*** The June 2010 response letter from USFWS-NJFO stated that the project has the potential to affect the Indiana bat unless specific New Jersey Department of Environmental Protection (NJDEP) permit conditions are implemented (USFWS 2010b), including:

- All conservation measures recommended by the USFWS-NJFO and adopted by the applicant, as stated in the document entitled: *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project*.

- USFWS-NJFO concurrence with final compensatory mitigation plans for forest impacts including: (1) preservation, enhancement, and / or restoration of Indiana bat habitat as one component of the 100- to 200-acre Highlands Forest restoration / education pilot site at the Hopatcong Switching Station; and (2) preservation, enhancement, and / or restoration of Indiana bat habitat at a site along the Passaic River.

In addition, the USFWS-NJFO noted that the applicant agreed to the recommended conservation measures for the Indiana bat. USFWS-NJFO stated that *with implementation of the above permit conditions, the USFWS concurs that, even considering cumulative impacts (i.e., from other portions of the route), the loss of approximately 21 acres of potential summer roosting and foraging habitat from construction of the eastern portion (New Jersey) of the project is insignificant based on the following:*

- The impacts are spread across a 25-mile linear project.
- The areas with the greatest impacts have been evaluated for Indiana bat habitat (Roseland Switching Station, Picatinny Arsenal) or surveyed using the USFWS mist net guidelines (USFWS 2011a) at the Hopatcong Switching Station and Fredon Relocation Site).
- In those areas identified by USFWS-NJFO as hibernacula and / or maternity colony foraging habitat, the applicant will not install any permanent structures (e.g., access road, tower) within 300 feet of wetlands or open waters and will not clear trees or locate temporary work spaces within 150 feet of wetlands or open waters.
- The applicant will provide compensatory mitigation for forest impacts, as described above.

USFWS-NJFO noted that to minimize cumulative impacts to Indiana bat habitat, additional information, surveys, and / or conservation measures may be necessary for the western segment of project in New Jersey (Delaware River to Hopatcong).

With implementation of the above permit conditions, USFWS-NJFO concurred that the risk of disturbance or injury to roosting bats from construction of the eastern segment of the project (outside of NPS lands in New Jersey) would be insignificant and discountable based on the seasonal restrictions included in PSE&G's revised *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project* (PSE&G 2010).

3.1.2 Bog Turtle

The USFWS-PFO, in a letter dated 16 October 2008, stated a determination that construction of the proposed project is not likely to adversely affect the bog turtle. However, should structures need to be located in the wetland and/or the ROW needs to be widened, further consultation with the USFWS-PFO will be necessary (USFWS 2008a). A letter from the USFWS-PFO from 27 January 2010 noted that the project would be not likely to adversely affect the bog turtle if the southern access route was used for construction and implementation, and if seasonal restrictions were put in place (USFWS 2010a). The 17 April 2012 letter from the USFWS-PFO noted a March 19, 2012 conference call indicating that the southern access road would be used. The letter provides recommendations for a seasonal restriction for construction of access roads and tower replacements, or a bog turtle survey completed with conditions outlined in the letter. A 300-foot buffer around wetlands and no felling of trees into wetlands were suggested for all work activities. The letter concludes that if the project is implemented with the southern access route and conditions for construction, the project is not likely to adversely affect the bog turtle (USFWS 2012a).

The USFWS-NJFO, in a letter dated 17 March 2008, provided locations of known bog turtle populations as well as areas of potential bog turtle habitat and preliminary recommendations to protect the bog turtle. In addition, USFWS-NJFO stated that it may request a Phase I or II bog turtle survey within the project area in New Jersey (USFWS 2008b).

An agency response letter to the applicant was received from the USFWS-NJFO on June 11, 2010 (USFWS 2010b). ***However this consultation response letter addressed only the eastern segment of alternative 2 within New Jersey, between Hopatcong and Roseland, well outside of NPS boundaries.*** The USFWS-NJFO stated that the project has the potential to affect the bog turtle in New Jersey unless specific NJDEP permit conditions are implemented, including all conservation measures recommended by the USFWS-NJFO and adopted by the applicant, as stated in the document entitled: *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project* (PSE&G 2010). Measures listed include no permanent structures located within 300 feet of confirmed bog turtle habitat, no temporary disturbances within 150 feet of confirmed bog turtle habitat, the installation of silt fences in any span with confirmed bog turtle habitat, and no improvement or enlargement of existing access roads (PSE&G 2010). The USFWS-NJFO stated that with the implementation of the above permit conditions, impacts to the bog turtle from construction of the eastern portion of the project will be insignificant and discountable. This determination is based on the extensive surveys already completed in New Jersey (listed below) and on the habitat buffers, fencing, and monitoring protocols adopted and detailed in PSE&G's revised Construction and Restoration Standards as noted above. The following bog turtle surveys have been conducted and the USFWS-NJFO has concurred with the results:

- Phase I ROW (July 8, 2008)
- Phase I DEWA (December 23, 2008)
- Phase II for 5 wetlands (June 18, 2009)
- Phase I Hopatcong Switching Station (July 29, 2009)
- Phase I access roads in eastern portion of project (March 23, 2010)
- Phase I for 11 additional spans (June 8, 2010)
- Phase II for 5 wetlands (July 8, 2010)
- Phase I for 11 additional wetlands (January 25, 2011)
- Phase I for 5 additional wetlands (January 25, 2012)

3.2 ESA SECTION 7 CONSULTATION

NPS initiated consultation with USFWS through letters sent February 10, 2010. No response to the consultation letters was received from USFWS. NPS also consulted with USFWS through a July 2010 *Preliminary Alternatives Newsletter*. A response letter to the newsletter was received from the USFWS-NJFO on October 21, 2010 (USFWS 2010c). The USFWS-NJFO indicated that the Indiana bat and the bog turtle are potential species of concern for this project; ***however the consultation response letter included areas of the alternatives that are outside of NPS boundaries and within New Jersey.*** Input from USFWS-PFO has been coordinated through USFWS-NJFO, the lead office for this project, since NPS requested a single point of contact for the consultation. Coordination and consultation between the NPS and the USFWS field offices in New Jersey and Pennsylvania is ongoing at this time in regard to ESA Section 7 Consultation for the Indiana bat and the bog turtle.

On February 7, 2011, NPS invited the USFWS to become a cooperating agency in the environmental review of the S-R Line (NPS 2011a). The USFWS agreed to be a cooperating agency on the project on March 14, 2011, noting that some of the proposed alternatives would cross within the boundary of the Cherry Valley National Wildlife Refuge, and the USFWS has interests and information concerning wildlife and habitat at the site (USFWS 2011b).

The USFWS also provided a letter on 31 January 2012 with comments on the DEIS, and on impacts to the bog turtle and Indiana bat. The letter notes impacts from the alternatives on the Indiana bat and bog turtle. The letter does not provide recommendations for further Indiana bat or bog turtle surveys along alternatives 2 and 2b, and acknowledges surveys for alternatives 3, 4, and 5. The letter concludes that impacts for these alternatives are not likely to adversely affect the Indiana bat or bog turtle, but that if this species is found, conservation measures would need to be developed (USFWS 2012b).

3.2.1 Indiana Bat

In the first agency response letter addressed to NPS dated October 21, 2010, the USFWS-NJFO confirmed concurrence with the determination in the June 11, 2010 USFWS-NJFO letter to the applicant that alternative 2 is not likely to adversely affect the Indiana bat (in New Jersey) based on the adoption of the conservation measures cited in the same letter of June 11, 2010 (USFWS 2010b; 2010c).

If the conservation measures that were agreed upon between the applicant and USFWS previously cannot be implemented for any particular span, the applicant has agreed to work with USFWS-NJFO to develop alternative, site-specific conservation measures sufficient to avoid adverse effects on the Indiana bat.

USFWS-NJFO further recommended a seasonal restriction on tree clearing from April to November 15 within 10 miles of known hibernacula, and from April 1 to September 30 in other parts of the species' range in New Jersey in their letter of October 21, 2010.

3.2.2 Bog Turtle

In the first agency response letter addressed to NPS dated October 21, 2010, the USFWS-NJFO confirmed concurrence with the determination in their June 11, 2010 letter that alternative 2 is not likely to adversely affect the bog turtle (in New Jersey) based on the adoption of the conservation measures cited in the June 11, 2010 letter (USFWS 2010b; 2010c).

CHAPTER 4: INDIANA BAT

The Indiana bat is a temperate, insectivorous, migratory bat that hibernates in mines and caves in the winter and summers in wooded areas. The species was originally listed as being in danger of extinction under the Endangered Species Preservation Act of 1966 (32 FR 4001, March 11, 1967), and is currently listed as endangered under the ESA (USFWS 2007).

4.1 SPECIES DESCRIPTION

The Indiana bat is a medium-sized bat with a total body length of approximately 3-½ to 5-½ inches and a wingspan averaging ten inches. The Indiana bat closely resembles two other species of *Myotis*: the little brown bat (*M. lucifugus*) and the northern long-eared bat (*M. septentrionalis*). Indiana bats are distinguished from the northern long-eared bat by the long, pointed, symmetrical prominence in front of the opening of the external ear (tragus). The Indiana bat is distinguished from the little brown bat by a distinctly keeled calcar (a spur of cartilage that supports the membrane between the foot and tail). In addition, the hind feet of an Indiana bat tend to be small and delicate, with fewer, shorter hairs (the hairs do not extend beyond the claws); the nose is lighter in color; the ears and wing membranes have a dull appearance and flat coloration that does not contrast with the fur, and the fur lacks luster (compared with that of little brown bats); and the skull of an Indiana bat has a small sagittal crest, and the braincase tends to be smaller, lower, and narrower than that of the little brown bat (USFWS 2007).

4.2 GENERAL LIFE HISTORY

The Indiana bat is migratory, hibernating in caves and mines in the winter and migrating to summer roost habitat. Reproductive females may migrate great distances, up to 357 miles, to form maternity colonies to bear and raise their young. Male Indiana bats and non-reproductive females typically do not roost in colonies and may stay close to their hibernaculum or migrate long distances to their summer habitat. Both male and female Indiana bats return to hibernacula in late summer or early fall to mate and enter hibernation (USFWS 2007).

4.2.1 Habitat Requirements

Due to its migratory behavior, the Indiana bat has requirements for two different types of habitat.

Winter Habitat Requirements: Suitable hibernacula in caves or mines provide stable internal temperatures (generally below 10°C [50°F] but above freezing 0°C [32°F]); relatively high humidity, and air flow (Butchkoski 2010). These criteria, in combination provide thermal protection for the Indiana bat and help to maintain physiological requirements during hibernation. Historically, caves that provided large volume, with rooms or vertical passages below the lowest entrance level sheltered the largest populations of hibernating Indiana bats. Caves with large volumes buffer the cave environment against extreme changes in outside temperature, and complex vertical structure offers a wide range of temperatures and, therefore, diversity of roosting sites. In some areas, the largest and most rapidly growing populations of Indiana bat occur in abandoned mines and at caves where measures have been implemented to restore hibernacula (USFWS 2007).

Indiana bats, especially females show site fidelity, returning annually to the same hibernacula, though movement to man-made hibernacula (such as abandoned mines) occurs as sites become available. Indiana bats often winter in the same hibernaculum with other species of bats and are occasionally observed clustered with or adjacent to other species, including gray bats (*Myotis grisescens*), Virginia big-eared bats (*Corynorhinus townsendii virginianus*), little brown bats, and northern long-eared bats.

Summer Habitat Requirements: Indiana bats first arrive at their summer locations as early as April or early May. During this mid-spring period prior to giving birth, adult females occupy trees that are similar to those used in maternity colonies in summer in terms of species, size, and structure. Most maternity colonies of Indiana bats that are known exist in fragmented landscapes with low-to-moderate forest cover. Documented habitat for maternity roosts includes riparian, bottomland and floodplain habitats, as well as upland vegetation communities or a mixture of upland and riparian habitat (USFWS 2007). Approximately 97 % of roost trees at maternity sites are deciduous species; however, Indiana bats consistently use coniferous trees at some sites during autumn swarming (USFWS 2007). Maternity colonies primarily occupy dead and dying trees in early to middle stages of decay. Primary roosts are located under exfoliating bark though living trees can also provide roost habitat such as the naturally peeling bark of shagbark (*Carya ovata*) and shellbark hickories (*Carya lacinosa*), and occasionally white oak (*Quercus alba*). At least thirty-three species of trees have been known to supply roosts for female Indiana bats and their young: 87 % are species of ash (*Fraxinus* spp.), elm (*Ulmus* spp.), hickory (*Carya* spp.), maple (*Acer* spp.), poplar (*Populus* spp.), and oak (*Quercus* spp.); hickory, oak and maple comprise 52 % of the roost tree species (USFWS 2007). Roost trees vary in size and the height and position of the snag relative to surrounding trees is important to selection because relative height and position affect the amount of solar exposure; primary roosts usually receive direct sunlight for more than half the day. The roost tree is typically within canopy gaps in a forest, in a fence line, or along a wooded edge within 50 feet of a forest edge (USFWS 2007).

Maternity colonies typically use 10 to 20 trees each year, but only one to three of these are primary roosts used by the majority of bats for some or all of the summer. In addition to a primary roost, alternate roosts are used by individuals or a small number of bats and may be used intermittently throughout the summer. On average, Indiana bats switch roosts every two to three days. Various trees used by the same individual tend to be clustered, and roost trees most often are in sunny openings in the forest created by human or natural disturbance. Indiana bats exhibit site fidelity to their traditional summer maternity areas and roost trees may be occupied by a colony for a number of years until they are no longer available or suitable (USFWS 2007). Non-reproductive females may also roost individually or in small numbers, including in the same trees as reproductive females (USFWS 2007).

Some adult male Indiana bats form colonies in caves in summer, but most are solitary and roost in trees. Similar to female Indiana bats, adult males roost primarily under bark and less often in narrow crevices. Tree species used by males generally are similar to those chosen by females though males will use smaller trees more often than females and may be more tolerant of shaded sites. Males also occasionally roost with reproductive females in the same tree.

Indiana bats may also use habitat near winter hibernation sites as (1) spring roost sites upon emergence from hibernacula; (2) fall roost sites during swarming and mating prior to hibernation; and (3) by males and non-reproductive females that may not migrate to summer habitat and instead may remain near the winter hibernation site. This habitat is similar to summer roost habitat (i.e., bats typically roost under exfoliating bark, with occasional use of vertical crevices in trees). Tree species are also similar to summer sites, although various pines (*Pinus* spp.) are commonly occupied in spring and fall. During this time, Indiana bats tend to roost more as individuals than in summer (USFWS 2007).

Night roosting may occur most often at sites not generally used as day roost but night roosts may also occur at the bat's day roost in conjunction with nocturnal tending of its young or during inclement weather (USFWS 2007).

4.2.2 Biological and Behavioral Characteristics

Reproduction: Mating occurs in the fall during swarming at hibernation sites, and females store sperm through the winter giving birth to a single young in June or early July while in their maternity roosts. Asynchronous births in the maternity colony result in variable sizes and ages of juveniles in the same colony. Lactation begins at birth and continues through the early flight period of young Indiana bats; young are able to fly (volant) within 3-5 weeks of birth. Once the young Indiana bats are volant, the maternity colony begins to disperse during the first two weeks in August, and the use of primary maternity roosts diminishes. The bats may stay in the maternity roost area until migration, although some large colonies may maintain a steadily declining number of bats into mid-September through early October and it is thought that late migrants may be young-of-the-year (USFWS 2007).

Food Habits: Indiana bats typically forage in closed to semi-open forested habitats and forest edges though visual observations suggest that foraging over open fields or bodies of water, more than 50 meters (150 feet) from a forest edge, does occur (USFWS 2007). Indiana bats hunt primarily around the canopy of trees, and occasionally descend to sub-canopy and shrub layers. In riparian areas, Indiana bats primarily forage around and near riparian and floodplain trees, as well as solitary trees and forest edges on the floodplain (USFWS 2007).

Indiana bats feed primarily on four orders of flying insects: Coleoptera (beetles), Diptera (flies), Lepidoptera (butterflies), and Trichoptera (caddisflies). Hymenopterans (winged ants) are abundant in the diet of Indiana bats for brief, unpredictable periods corresponding with the sudden occurrence of mating swarms.

Home Range: Indiana bats occupy distinct home ranges, particularly in the summer; however, relatively few studies have determined the home ranges of Indiana bats and calculations were based on a small number of individuals and a variety of statistical analyses. In general, mean home range estimates varied from a high of 1,648 acres in Missouri to a low of 205 acres in Vermont; intermediate home range sizes were identified for Virginia (618 acres) Kentucky (385 acres), and Illinois (357 acres). In addition, maternity colonies of Indiana bats also appear to be faithful to their foraging areas within and between years (USFWS 2007).

Migration: Spring emergence of Indiana bats from hibernacula varies across their range by latitude and weather. Females emerge earlier than males, generally emerging in early April and completing emergence by early May; males were found to emerge in early May and by mid-May few were left hibernating. At the Mt. Hope mine complex in New Jersey, peak spring emergence of females was in early April, and emergence of males peaked at the end of April and exit counts from several hibernacula in southern Pennsylvania and Big Springs Cave in Tucker County, West Virginia suggest that peak emergence from hibernation is mid-April (USFWS 2007).

Indiana bats have been found to travel long distances to and from hibernacula from an average of 296 miles to a maximum migration of 357 miles in one study; shorter migration distances are also known to occur (USFWS 2007). Indiana bats at multiple locations in Indiana were found in hibernacula only 34 to 50 miles from their summer range. Insufficient data are available to determine habitat use and needs for Indiana bats during migration.

Use of Corridors: Many species of bats, including the Indiana bat, consistently follow tree-lined paths rather than cross large open areas and as a result, suitable patches of forest may not be available to Indiana bats unless the patches are connected by a wooded corridor. Unfortunately, biologists do not know how large an open area must be before Indiana bats hesitate or refuse to cross. Studies have documented Indiana bats crossing interstate highways and open fields and also showed that Indiana bats

increased commuting distance by 55 % to follow tree-lined paths, rather than flying over large agricultural fields, some of which were at least 1-kilometer (0.6 mile) wide (USFWS 2007).

Hibernation: Most Indiana bats enter hibernation by the end of November (mid-October in northern areas) although populations of hibernating bats may increase throughout fall and into early January at some hibernacula (USFWS 2007).

Indiana bats cluster on the ceilings and side walls of underground hibernacula, in caves or cave-like locations such as abandoned mines. The Indiana bat hibernates in clusters of about 250 to 300 bats per square foot although cluster densities as high as 500 bats per square foot have been recorded. It is thought that behavioral thermoregulation, in the form of clustering, allows Indiana bats to hibernate at a wider range of ambient temperatures than would be possible for non-colonial species.

4.3 HISTORIC RANGE, CURRENT DISTRIBUTION, POPULATION LEVEL

Historically, the winter distribution of Indiana bats was restricted to caves in limestone karst regions of about 24 states from Vermont, Massachusetts and Connecticut through the northeastern states to Alabama, Georgia, Florida and west through Illinois, Indiana, Iowa, Wisconsin, Michigan, Missouri and Oklahoma. Winter hibernacula are no longer active in Florida, Georgia, Iowa, Massachusetts, and Wisconsin (USFWS 2007). However, in a few instances the Indiana bat has expanded its range outside of the historic winter range as a result of occupying man-made structures (USFWS 2009).

The summer distribution of Indiana bat maternity colonies include portions of 16 states from Vermont, New York, New Jersey, Pennsylvania and Maryland through West Virginia, Kentucky, Tennessee, and Alabama then westward to Ohio, Indiana, Illinois, Iowa, Missouri, Arkansas and Oklahoma. The states with the largest number of identified maternity colonies are Indiana (83), Kentucky (32), New York (31), Illinois (28), and Iowa (27) (USFWS 2007).

When listed as an endangered species in 1967, the Indiana bat population was estimated to be around 880,000 bats (USFWS 2009). The 2009 population estimate for Indiana bats was about 387,000 (USFWS 2011c).

In Pennsylvania the Indiana bat was historically found at eight hibernation sites and Indiana bats are now found at 18 hibernation sites within 11 Pennsylvania counties. A total of approximately 1,000 Indiana bats are known to hibernate within the identified sites (Butchkoski 2010). During the summer, nine maternity sites have been found in seven counties. Some counties contain both winter hibernation and summer sites (Butchkoski 2010). In New Jersey Indiana bats are known to hibernate in the Hibernia Mine in northern New Jersey and summer roosts have been identified in riparian areas (NJDEP 2001).

4.4 THREATS

The decline of Indiana bats can be attributed to commercialization of caves, microclimate changes in caves, loss of summer habitat and habitat connectivity, environmental contaminants, collisions with man-made objects and disease including white-nose syndrome (WNS). Of these the most significant threats are habitat loss / degradation, forest fragmentation, winter disturbance of hibernacula, environmental contaminants, and WNS. WNS is a fungus (*Geomyces destructans*) found on faces and wings of affected bats. WNS has killed over a million bats since 2006 (USFWS 2011c).

The 5-year review of the Indiana Bat Draft Recovery Plan, First Revision (USFWS 2009) raised the recovery priority for Indiana bat from 8 (moderate degree of threat; high recovery potential) to 5 which means that the degree of threat is increased from moderate to high and the potential for recovery is now

considered low. Initially the Indiana bat population increased from 2003-2007 as a result of the implementation of increased conservation measures on hibernation sites. With the introduction of WNS the population has begun to decline in affected areas and recovery of the species is compromised (USFWS 2009).

4.5 DESIGNATED CRITICAL HABITAT

Important caves and mines for the hibernation of the Indiana bat have been designated in as “critical habitat” in six states; however, no critical habitat for Indiana bat has been designated in Pennsylvania or New Jersey (USFWS 2009; USFWS 2011c). USFWS has defined priority hibernacula based on the number of bats that are contained by the hibernacula. Priority 1 hibernacula contain at least 10,000 Indiana bats and are considered essential for the recovery and long-term conservation of the species. The other priority categories are: Priority 2 (1,000 to 9,999), Priority 3 (50-999), and Priority 4 (1-49) hibernacula. Neither Pennsylvania nor New Jersey contains a Priority 1 hibernaculum; however, Pennsylvania contains one Priority 2 hibernacula. Pennsylvania also contains three Priority 3 and seven Priority 4 hibernacula; New Jersey contains two Priority 3 hibernacula (USFWS 2007).

4.6 EFFECTS OF PROJECT ACTIONS

4.6.1 Construction

Summer habitat is present along alternative 2 within NPS boundaries. However, surveys conducted along alternative 2 identified tree roosting bat species, including a state-listed species, northern myotis, but did not detect any Indiana bats. This could indicate that Indiana bats are not present or are present in low numbers and not easily detected by the surveys (Sanders 2009). Approximately 240 acres would be cleared initially in the ROW, with approximately 129 acres of this identified as mature forest. Pulling and splicing sites would be constructed outside the 350-foot corridor, resulting in approximately 22 acres of forest cleared for these sites and the associated spur roads; trees surrounding the pulling and splicing sites would be trimmed but not removed (unless unavoidable) to allow for construction activities.

Approximately 9.6 acres of vegetation would be permanently lost through the development of access roads. Summer roosting and foraging habitat could be affected by the removal of trees during clearing and construction activities, which may adversely affect any roost sites or maternity colonies that may be present. As nocturnal foragers, Indiana bats feed mainly in the tree canopy and may use the linear space of ROWs, trails, or over streams as travel and foraging corridors. Foraging activities should not be affected unless construction activities occurred at night. If construction occurred at night, noise and activity could deter foraging; however, the use of lights to illuminate construction sites could also attract bats to the arc of lighting to feed on insects attracted to the light.

Transmission line construction at several river and stream crossings under alternative 2 would be expected to have few impacts on bat foraging and roosting habitat.

Due to the potential impacts to summer habitat for Indiana bat, the applicant has specified that USFWS-approved conservation measures would be implemented to ensure that the project would not be likely to adversely affect the Indiana bat. For example, seasonal restrictions would be followed in the applicant’s construction schedule and restoration standards for the S-R Line project would be followed to reduce and avoid any unforeseen disturbance or injury to roosting Indiana bats from the construction of the project. Seasonal restrictions for the cutting of potential roost trees (trees with a diameter at breast height [DBH] greater than 8.7 inches [22 centimeters]) would prohibit cutting between April 1 and September 30, when Indiana bats could be present. Additional conservation measures are listed below in Section 4.7: Proposed Mitigation Measures.

Mitigation that has been specified for impacts on forested habitat could also offset any unforeseen impacts on the Indiana bat resulting from the proposed project under alternative 2. Projects include the Hopatcong Forest Restoration Project and mitigation proposed along the Passaic River (USFWS 2010c).

Two caves, Coppermine and Cold Air Cave occur along MDSR 3.1 and 10.5 miles, respectively, from the centerline of the ROW under alternative 2 and could provide potential winter hibernacula sites. Surveys to determine the potential for winter and summer Indiana bat habitat within the existing ROW of alternative 2 by Sanders (2009) did not extend outside of the ROW to the areas where these caves are located. Indiana bats are known to hibernate in nearby counties, and it is possible that individuals from these wintering sites could be present within NPS boundaries during the breeding season (April through September).

Additional surveys for Indiana bat winter and summer habitat will be conducted by USFWS-approved certified surveyors according to the USFWS protocol prior to the initiation of any construction for alternative 2 as discussed in Section 4.7: Proposed Mitigation Measures.

4.6.2 Operation

No adverse impacts to Indiana bats are expected as a result of the operation of the proposed transmission line. Because Indiana bats are known to forage in the tree canopy and within edge habitat, operation of the S-R Line within NPS boundaries has the potential to create foraging habitat where adjacent potential summer (forested) habitat creates an “edge” to the ROW. Indiana bats may also use the maintained ROW as a travel and foraging corridor, especially in riparian areas and near stream crossings.

4.6.3 Maintenance

Similar to operation of the transmission line, no adverse impacts are expected to Indiana bats during routine maintenance of vegetation under the ROW; however, if it becomes necessary to remove problem trees along the edge of the ROW, mitigation measures should be employed as outlined for tree removal during construction and in Section 4.7: Proposed Mitigation Measures.

4.7 PROPOSED MITIGATION MEASURES

No Indiana bats were captured during mist net survey efforts in 2009 (Sanders 2009), however, suitable habitat for this species is present in the action area. In the spring prior to vegetation clearing, NPS will coordinate with USFWS to determine if any areas of particularly suitable habitat should be re-surveyed for summering Indiana bats. Survey results would be submitted to USFWS for review and concurrence. Surveys conducted prior to vegetation clearing activities are particularly important because construction would not occur for some time following the completion of the NEPA process and Indiana bats could begin using habitat between site surveys and construction activity. Repeat survey efforts may also be warranted if substantial changes to the USFWS summer survey protocols, now in draft, become finalized prior to the start of vegetation removal.

Construction monitoring will be conducted both during construction and during post-construction vegetation maintenance. Areas of high-suitability Indiana bat habitat will be flagged and avoided during construction if possible. The purpose will be to flag and preserve the highest-suitability roost trees to the maximum extent practical, including: live shagbark hickories (*Carya ovata*) over 9 inches dbh; lightning-struck trees over 9 inches dbh; dead, dying, or damaged trees of any species over 9 inches dbh with at least 10% exfoliating bark; den trees, broken trees, or stumps over 9 inches dbh and over 9 feet in height; and live trees of any species over 26 inches dbh. When practical, trees over 9 inches dbh will

girdled instead of cut. Construction monitoring may also include use of acoustic detectors, if such methods are recommended by USFWS.

In addition, a species-specific Conservation and Mitigation Plan will be prepared and implemented by recognized and qualified zoologists, including individuals recognized by the USFWS or state conservation agencies. Adherence to the approved Indiana Bat Conservation and Mitigation Plan will be required as a condition of any NPS permit authorizing the project. A Conservation and Mitigation Plan will include:

- Target areas and methodology for repeat summer survey effort, as discussed above.
- Construction monitoring, as described above.
- A seasonal restriction will prohibit cutting of trees greater than 5 inches dbh between April 1 and September 30 (restricted season), both during construction and during post-construction vegetation maintenance.
- If hibernacula are identified within 10 miles of the action area, the restriction on tree clearing will be implemented from April 1 to November 15.
- The modification of the locations for towers, access roads, laydown areas, and other ground-disturbing activities would be implemented in order to minimize areas of suitable Indiana bat summer habitat. Trees that have the potential to provide roost habitat for Indiana bat would be reserved to the extent practicable.
- Tree clearing for temporary access or temporary work spaces will be prohibited.
- No permanent structure (e.g., access road, tower) will be installed within 300 feet of wetlands or open waters. No temporary work spaces will be located within 150 feet of wetlands or open waters.
- No blasting will be authorized within NPS units.
- For any compensatory mitigation to offset tree loss in NPS units, NPS will work with USFWS to incorporate the planting of tree species that are likely to become suitable roosts for the Indiana bat.

4.8 CUMULATIVE EFFECTS ANALYSIS

Cumulative effects are those effects of future state or private activities, not involving federal activities, which are reasonably certain to occur within the action area of the federal action subject to consultation [50 CFR §402.02]. This definition applies only to Section 7 analyses and should not be confused with the broader use of this term in the National Environmental Policy Act or other environmental laws.

Actions inside the parks could adversely affect Indiana bats including utility projects that may require tree clearing, or disturbance to potential habitat such as: the Tennessee Gas Line Proposal (addition to an existing gas pipeline), the Columbia Gas Transmission Company pipeline (replacement of an existing gas pipeline), and the Northeast Supply Link Expansion (Palmerton Loop gas pipeline). Utility ROW development and expansions within the park boundaries could require vegetation removal including tree clearing that results in a loss or alteration of potential summer roosting habitat.

In addition, climate change may alter species distribution as a result of the expansion or contraction of breeding ranges, changes in food resources, and the availability of seasonally used habitats.

Overall, cumulative impacts on Indiana bats inside the parks from future state or private activities are expected to be adverse.

4.9 CONCLUSION

Based on the currently available information for the potential presence of Indiana bat within the alternative routes, as proposed within NPS boundaries, adverse impacts to Indiana bats, particularly to potential summer roost / maternity colony habitat could occur. The implementation of mitigation measures would minimize impacts to Indiana bat; resulting in a determination that the proposed project *may affect but is not likely to adversely affect* the Indiana bat.

CHAPTER 5: BOG TURTLE

5.1 SPECIES DESCRIPTION

The bog turtle is one of the smallest turtles in North America and is separated taxonomically into two geographically distinct populations. The northern population ranges from Massachusetts to Maryland and was listed as a federally threatened species on November 4, 1997. The *Recovery Plan* was finalized in 2001 by the USFWS and the USFWS recently announced the initiation of the 5-year status review for the bog turtle in the Federal Register in June of 2011. The USFWS (2001) describes the bog turtle as follows:

—The bog turtle is the smallest member of the genus *Clemmys* and one of North America's smallest turtles. This species is recognized by two characters: a light brown to ebony lightly sculptured carapace and a bright yellow, orange, or red blotch on each side of the head. The moderately domed and weakly keeled carapace may have a pattern of radiating light lines or be uniformly dark brown. The sides of the carapace are nearly parallel, giving the shell a distinctly oblong appearance when viewed from above. The plastron is variable in coloration, with strongly contrasting cream and black areas. The limbs are dark brown with reddish flecking; the feet are weakly webbed.”¹

5.2 GENERAL LIFE HISTORY

Bog turtles are active during the warmer months (spring through fall), and they typically emerge from overwintering during April. Mating occurs from April through June; egg-laying usually occurs in June and July, with hatching during late August and early September. Throughout the summer they remain concealed in dense wetland vegetation and bask occasionally in the sun. To escape high summer heat, avoid danger, or to hibernate, they burrow into the mucky bottom of the surrounding bog. In Pennsylvania and New Jersey, adults and juveniles usually enter the mud to overwinter during late September and October, where they stay until April. For half of their lives, bog turtles exist in a dormant state buried in the mud (Shiels 1998).

5.2.1 Habitat Requirements

Bog turtles inhabit a variety of wetland types throughout their range, but are usually found in small, open canopy, herbaceous sedge meadows and fens bordered by wooded areas. These wetlands are a mosaic of microhabitats that include dry pockets, saturated areas, and areas that are periodically flooded. Bog turtles depend on this diversity of microhabitats for foraging, nesting, basking, hibernation, and shelter (USFWS 2001). Bog turtles prefer wetlands with soft, saturated soils such as fens or sedge meadows fed by seeps and springs of cold groundwater that have been in contact with calcium rich bedrock or soils (USFWS 2001). Deep, soft, mucky soils allow bog turtles to burrow to avoid predators and to escape climatic extremes (Shiels 1998). Groundwater springs, seeps, and subsurface flows provide areas where the turtles can overwinter without the threat of freezing (Shiels 1998).

The USFWS (2006) recognizes potential bog turtle habitat as wetlands that possess the three suitable criteria: hydrology, soils, and vegetation. The soil and hydrology components are the primary determinants of potentially suitable habitat rather than vegetation. However, all three components are

¹ In 2001, the bog turtle genus was changed from *Clemmys* to *Glyptemys* after research determined that the bog turtle is not directly related to the spotted turtle (*Clemmys guttata*) (Parham and Feldman 2002)

necessary to provide critical wintering sites and nesting habitats for the bog turtle. In general, bog turtles typically spend most of their time in the wetland areas, using the upland areas only as travel corridors.

5.2.2 Biological and Behavioral Characteristics

Reproduction: Bog turtles have been observed copulating on both tussocks and in shallow rivulets (USFWS 2001). Nesting sites have been observed as a cavity dug by the turtle and then backfilled after the eggs have been laid, but that “often no formal nest is dug, but instead eggs are merely laid in the top of sedge tussocks” (USFWS 2001). Bog turtles have also been observed nesting on elevated areas including tussocks, depositing their eggs in moss and moist earth; these tussock nesting sites have been described as a complete absence of woody shrubs and an extremely low and sparse cover of herbaceous vegetation. Bog turtle clutch size normally varies from 1 to 6 eggs; eggs are deposited and left to incubate unattended for approximately six to eight weeks (Shiels 1998). It has been observed that eggs may hatch from August through September (Shiels 1998). In the southern part of the northern range, however, it is possible that eggs may overwinter and hatch the following spring (USFWS 2001).

Movement and Home Range: The movement and home ranges of bog turtles reported are variable. In eastern Pennsylvania, a mean home range averaged 1.28 hectares (3.2 acres) for surveyed bog turtles. It has been found that, although turtles had small activity ranges, they moved extensively within these ranges, and that these home ranges rarely extended beyond the habitat’s transitional zone. One of the reasons a bog turtle may extend its home range may be due to decreased habitat quality, such as an increase in invasive vegetation, for example multiflora rose (*Rosa multiflora*). Similarly, individual bog turtles have been found crossing roads a considerable distance from suitable habitat; these long distance movements may result from emigration out of habitats declining in quality through disturbances or succession.

Hibernation: Although bog turtles are dependent upon suitable open-canopy sedge meadows and fens, they generally retreat back into more densely vegetated areas to hibernate (USFWS 2001). Bog turtle hibernation sites have been found on and near shrubby hummocks that can serve as hibernacula at the interface zone between open fen habitats and shrub and wooded swamp (USFWS 2001). Ernst et al. (1989) reported on bog turtle hibernation sites in New Jersey and Pennsylvania and found turtles hibernating in spring-fed rivulets under soft mud, in muskrat burrows, under sedge clumps, at the base of tree stumps, and in meadow vole burrows. Bog turtles have also been found to overwinter together with spotted turtles (*Clemmys guttata*). Bog turtles have demonstrated a strong fidelity to their hibernacula; all hibernacula were flooded and located along spring-fed rivulets, or in a stream on a flood plain. Hibernating turtles were found under water in soft mud, in crevices between rocks, or between tangled roots (USFWS 2001).

Food Habits: The bog turtle primarily feeds on insects but also may consume plants, frogs, slugs, earthworms, crayfish, and carrion (USFWS 2001).

5.3 HISTORIC RANGE AND CURRENT DISTRIBUTION

As stated in the *Bog Turtle (Glyptemys muhlenbergii) Northern Population Recovery Plan*, the northern allopatric population of the bog turtle ranges through seven states from Massachusetts to Maryland, including both New Jersey and Pennsylvania (USFWS 2001). Bog turtles were historically reported throughout New Jersey and once occurred in 18 counties; however, they are now only found in 13 of these counties, including Warren County, New Jersey through which portions of the preferred alternative would be located (USFWS 2001). Along with New Jersey and Maryland, eastern Pennsylvania has been long considered the stronghold of the bog turtle and this species is still found in 15 of the 17 counties from which the species was previously reported, including Northampton and Monroe Counties in

Pennsylvania through which portions of the preferred alternative would be located (USFWS 2001). DEWA is also part of the Delaware Recovery Unit for the bog turtle, which includes the following minimum, long-term protection measures (USFWS 2001):

- The habitat areas used by a population are under conservation management and are protected against adverse effects (eg., wetland draining, ditching, filling or excavation; drawdown by water supply wells; pollution from point and non-point sources; succession to woody vegetation; invasive plant species), and
- Recharge areas and buffer zones are protected by conservation to prevent adverse hydrological alterations (such as stream diversions, mining, wells, roads, and impervious surfaces).

5.4 THREATS

The bog turtle has experienced at least a 50 % reduction in range and numbers over the past 20 years. The greatest threats to its survival include the loss, degradation, and fragmentation of its highly specialized wetland habitat, compounded by the take of long-lived adult animals from wild populations for illegal wildlife trade (USFWS 2001). Habitat fragmentation and alteration also expose adult turtles to elevated risk of incidental mortality including being crushed on roads, as well as increased exposure to predation and collection (USFWS 2001; NPS 2005).

5.5 EFFECTS OF PROJECT ACTIONS

The proposed project alternatives would result in direct effects to emergent wetlands which have the potential to provide bog turtle habitat. Direct effects are related to the physical disturbance/conversion of an area that is caused during the construction period and as a result of the new footprint. The construction of the proposed project under alternative 2 has the potential to impact wetlands that provide the appropriate soils, hydrology and vegetation conditions that may in turn, potentially support the bog turtle. There are concerns about illegal collection and human disturbance to bog turtles as a result of the proposed project. The 2005 Joseph M. McDade Recreational Trail Biological Assessment included measures to protect bog turtles from illegal collection and human disturbance. Measures taken under that Biological Assessment included physical barriers and visual screening to discourage users from leaving the trail, and the restoration of parking areas and road traces to disguise their existence to prevent access and collection of bog turtles. The impact of these measures is ongoing, even through construction activities associated with the McDade Recreational Trail have ceased (NPS 2005).

5.5.1 Construction

Removal of Existing Structures: Alternative 2 would involve the removal of all or a portion of the existing B-K Line. The B-K Line structures would be removed but the foundations for these structures would remain in place. The removal of the structures would require constructing access roads. Because access roads would also be required for the construction and long-term maintenance of the new line, adverse impacts from removing the line would be the same (or less than) the impacts discussed for construction of the S-R Line.

Construction of New Transmission Lines: Construction activities including site preparation and construction of access roads, tower foundations, crane pads, wire pull locations, and pulling and splicing sites, as well as the use of heavy equipment and staging areas should be conducted to avoid wetlands and suitable bog turtle habitat; however, if these areas cannot be avoided these activities would disturb and wetland functions and values. Specifically, the construction of access roads would cause increased sedimentation affecting water clarity and water quality as well as increased siltation and alteration of

drainage patterns. Use of heavy construction equipment and trucks would contribute to the compaction of soil in and near wetland areas that could cause damage to soil structure, which determines the ability of a soil to hold and conduct water, nutrients, and air necessary for plant root activity and growth (UM 2001). Soil compaction would also increase runoff, thus increasing soil erosion and cause changes to hydrology, which would affect wetland function. Alteration of water quality, compaction of soils, and loss of vegetation as a result of construction would potentially alter the availability and use of wetland habitat for the bog turtle. In addition to direct effects from construction, indirect effects to wetlands resulting from construction activities in the adjacent uplands could include:

- changes in hydrology (from roads, detention basins, irrigation, increases in impervious surfaces, sand and gravel mining);
- degradation of water quality (due to herbicides, pesticides, oil and salt from various sources including roads, agricultural fields, parking lots and residential developments);
- acceleration of succession (from fertilizer runoff); and
- introduction of exotic plants (due to soil disturbance and roads) (USFWS 2001).

Specific best management practices to protect wetlands from increased sedimentation and compaction would be used to minimize and mitigate these impacts as described further in Section 5.7: Proposed Mitigation Measures.

5.5.2 Operation

No adverse impacts are expected as a result of the operation of the proposed transmission line under alternative 2.

5.5.3 Maintenance

Vegetation Maintenance: To maintain the ROW for the S-R Line, vegetation would be selectively cleared wetland areas according to a NPS-specific and NPS-approved vegetation management plan that would be developed by the applicant. As part of the NPS-approved vegetation management plan, protection and avoidance measures to maintain and preserve wetland vegetation would be employed. Generally maintenance of vegetation could include actions prescribed within the current applicant vegetation management plans such as the development of a list of compatible and incompatible plant species; guidance for low-impact clearing methods; tree removal and herbicide use. If trees are removed in wetland areas, all associated organic materials (with the exception of stumps) from tree cutting would be removed from the wetlands, wetland buffers, or water-body buffer areas and stored in upland areas. Herbicides would not be used in wetland areas on NPS lands. The only exception to herbicide use would be for stump-treating nonnative invasive plants. Appropriate herbicides would be approved by NPS for specific treatment use.

Invasive Species Management: Nonnative, invasive plant species can compete with native species, and affect the quality of suitable bog turtle habitat. While not all nonnative species are harmful, those that are invasive can have serious consequences for native habitats. Ground disturbance from maintenance activities, especially tree removal, could facilitate the spread of invasive plant species. In addition, the use of dirty equipment can act as a seed source for invasive species. The spread of invasive plant species can be caused by changes in vegetation composition after vegetation management, site clearing and/or access road construction and use. The colonization and spread of invasive plant species causes considerable problems, including competing with native species, contributing to species extinctions, altering the structure of natural plant communities, and disrupting ecosystem functions. If the bog turtle cannot adapt

to the changes, the habitat may become inhospitable and unsuitable for the bog turtle. Invasive species management programs would be implemented through the applicant's NPS-specific, NPS-approved vegetation management plan.

Before the initiation of construction, the applicant would design management guidelines for invasive plant species to be included in the NPS-specific vegetation management plan to avoid the spread of invasive plant species into suitable bog turtle habitats. These guidelines, which would include regular monitoring and treatment of key invasive plant species, would also require approval by the NPS prior to implementation. The invasive species management guidelines included in the applicant's vegetation management plans would be the primary mechanism for preventing and managing the spread of invasive plant species in and adjacent to the ROW and protecting suitable bog turtle habitat.

5.6 ALTERNATIVE 2

A total of 7 wetlands identified in a wetland delineation survey in 2008 were included a Phase 1 bog turtle survey within the NPS boundaries in Pennsylvania (Table 2; Mellon 2009). The Phase I review of wetland soils, hydrology, and vegetation of the seven wetlands determined that only one of the 7 wetlands (Wetland 1) would be affected by alternative 2. Wetland 1 (Arnott Fen), is a calcareous wetland within DEWA that along with surrounding wetlands and forest supports a known population of bog turtles (Figures 3 and 4). The fen vegetation community is classified as a poison sumac / red-cedar / bayberry fen, which also contains calciphytic vegetation and special status plant species as a result of the limestone geology (Mellon 2010). Since the area is known bog turtle habitat, as well as home to a number of Pennsylvania plant species of special concern, Mellon (2009) concluded that there was no reason to further disturb the habitat and no data were collected in the Phase I survey; a Phase II survey was not completed in Arnott Fen for the same reason. In a response letter dated 16 August 2010, the Pennsylvania Fish and Boat Commission (PFBC) stated that *alternative 2 will pass through a wetland on federal lands known to support the bog turtle, thus potentially resulting in adverse impacts to the bog turtle and its habitat* (PFBC 2010).

Within NPS boundaries in New Jersey, a wetland investigation was conducted in 2007 along the ROW on NPS lands for alternatives 2 in accordance with the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989). Following the wetland delineation, a Phase 1 bog turtle survey was conducted in November 2008 by EcolSciences (2008). Wetlands adjacent to access roads (Ridge Road, Hamilton Road, and Samuels Lane) were also identified and reviewed during the Phase I investigation. A total of 10 wetland areas located within the ROW and access roads or within 300 feet of the ROW were included in the Phase 1 bog turtle survey; however, only one wetland, Wetland 44, portion 1, was considered to have potential bog turtle habitat based on the presence of appropriate hydrology, soils and hydrology. Two other wetlands (Wetland 42, portion 1 and portion 2) were considered to have "unlikely" bog turtle habitat because habitat criteria for the bog turtle were only partially met (EcolSciences 2008). The remaining seven wetlands that were surveyed did not contain suitable criterion for hydrology, soils, and vegetation (Table 2). Additional detail on the characteristics of the wetlands surveyed during the Phase 1 bog turtle surveys may be found in the EIS (NPS 2011b).

Following results from the Phase I bog turtle surveys in New Jersey, a Phase 2 Bog Turtle Survey was conducted on Wetland 44 in accordance with USFWS guidelines during May and June of 2009. Based on the EcolScience (2010) investigation, no bog turtles are located within Wetland 44.

In summary, the Phase I and Phase II bog turtle surveys identified only one wetland, Arnott Fen (Wetland 1), as supporting bog turtles within NPS-lands along alternative 2.

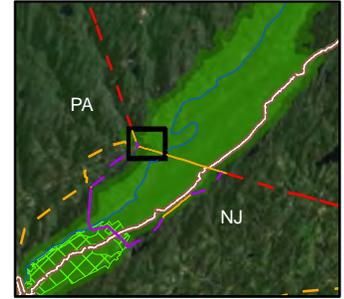
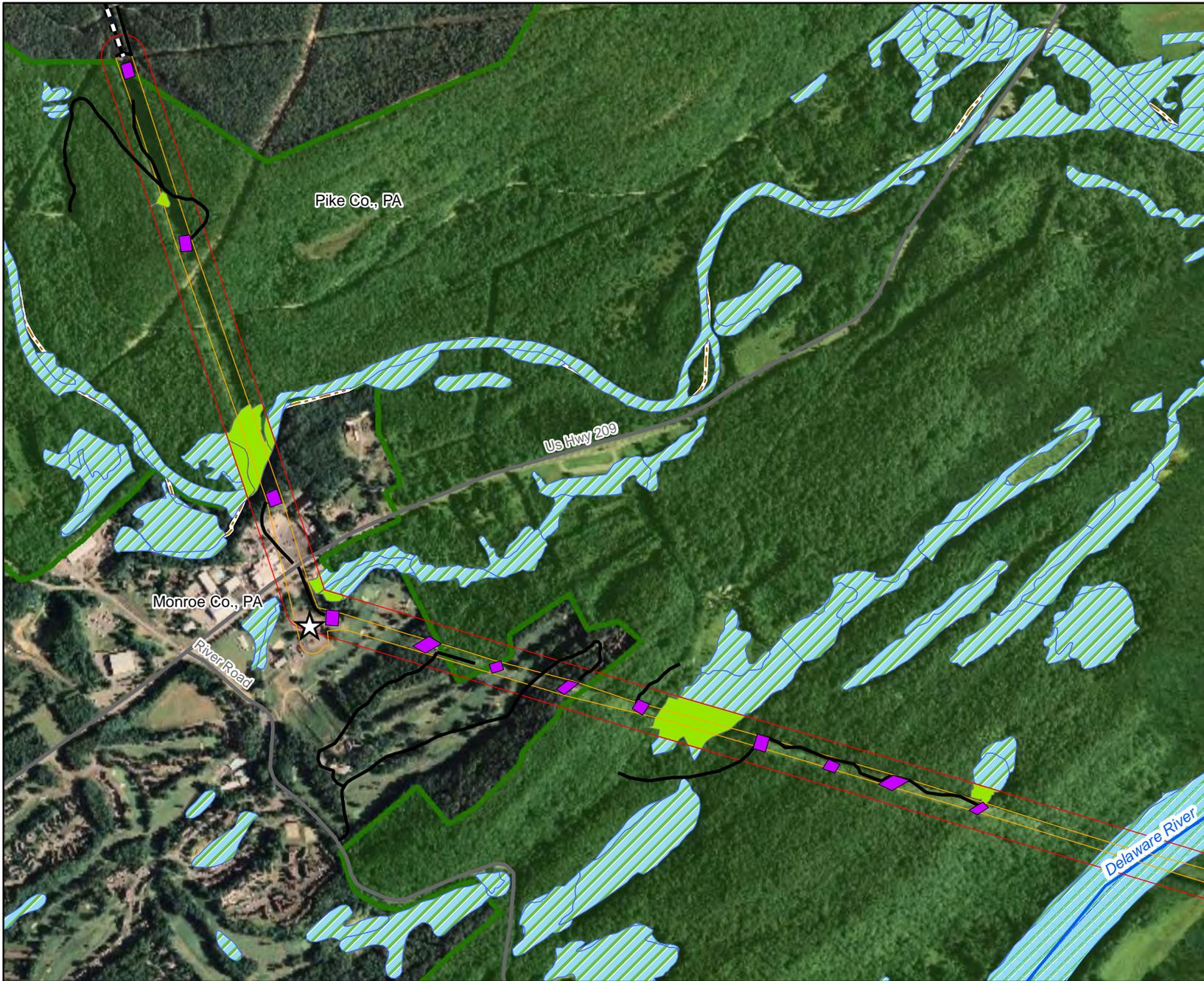
TABLE 2: SUMMARY OF PHASE I SURVEY RESULTS OF WETLANDS ALONG ALTERNATIVE 2 IN PENNSYLVANIA AND NEW JERSEY

Wetland ID	Wetland Size (acres)	Wetland Type and Amount (% or acres)	Extent of "Mucky" Soils (by wetland type)	Survey Effort (in person-hrs)	Bog Turtle Habitat?
State of Pennsylvania					
1	~20	Not surveyed; known bog turtle habitat	N/A	0	Yes
2	~12	PEM – 90% Open Water – 10%	<10% 0%	1	No
3	~4	PEM Flooded Forested Wetlands with dead trees – 100%	0%	0.5	No
4	~4	PEM Flooded Forested Wetlands with dead trees and sedges – 100%	70%	0.5	No
5	~0.1	PEM – 100%	0%	0.3	No
6	~2	PEM Flooded Forested Wetlands with dead trees and shrubs – 100%	0%	1	No
7	~0.5	PEM – 50% PFO (forested stream edge) – 50%	0%	0.5	No
State of New Jersey					
42, portion 1	0.1 to 0.5	PFO – 100%	70%	1.33	Unlikely*
42, portion 2	0.5 to 1.0	PEM – 40 % PSS – 60%	30 0	0.83	Unlikely*
44, portion 1	0.5 to 1.0	PEM – 70% PSS – 30%	>70 10-29%	0.83	Yes
44, portion 2	> 5	PEM – 90% PSS – 10%	<3 0	0.5	No
45	1.0 to 2.0	PSS – 100%	0	0.5	No
46	<0.1	PEM – 25% POW – 75%	0 0	0.27	No
47		PEM – 50% PSS – 50%	0 0	0.7	No
Hamilton Road	<0.1	PFO – 100%	10-29%	0.43	No
Ridge Road A	0.5 to 1.0	PEM – 100%	0	1.03	No
Ridge Road B	0.1 to 0.5	PEM – 30% PFO – 70%	0 0	0.53	No

PEM - Palustrine Emergent Wetland
PSS - Palustrine Shrub-Scrub Wetland
PFO - Palustrine Forested Wetland

Source: EcolSciences 2008, 2010; Mellon 2009

*See wetland descriptions in the above paragraphs for reasoning of unlikely.



- Legend**
- ☆ Substation
 - Crane Pad/ Tower Location
 - ≡≡ Outside Study Area
 - Existing ROW in Study Area
 - 350 ft Corridor
 - Appalachian National Scenic Trail
 - Delaware River
 - Proposed Access Road
 - Road
 - Delaware Water Gap National Recreation Area
 - Wetlands within 350ft buffer
 - Wetlands
 - County Line

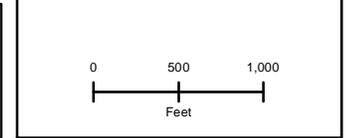


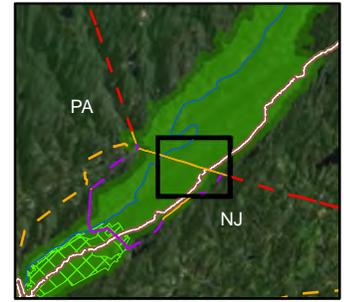
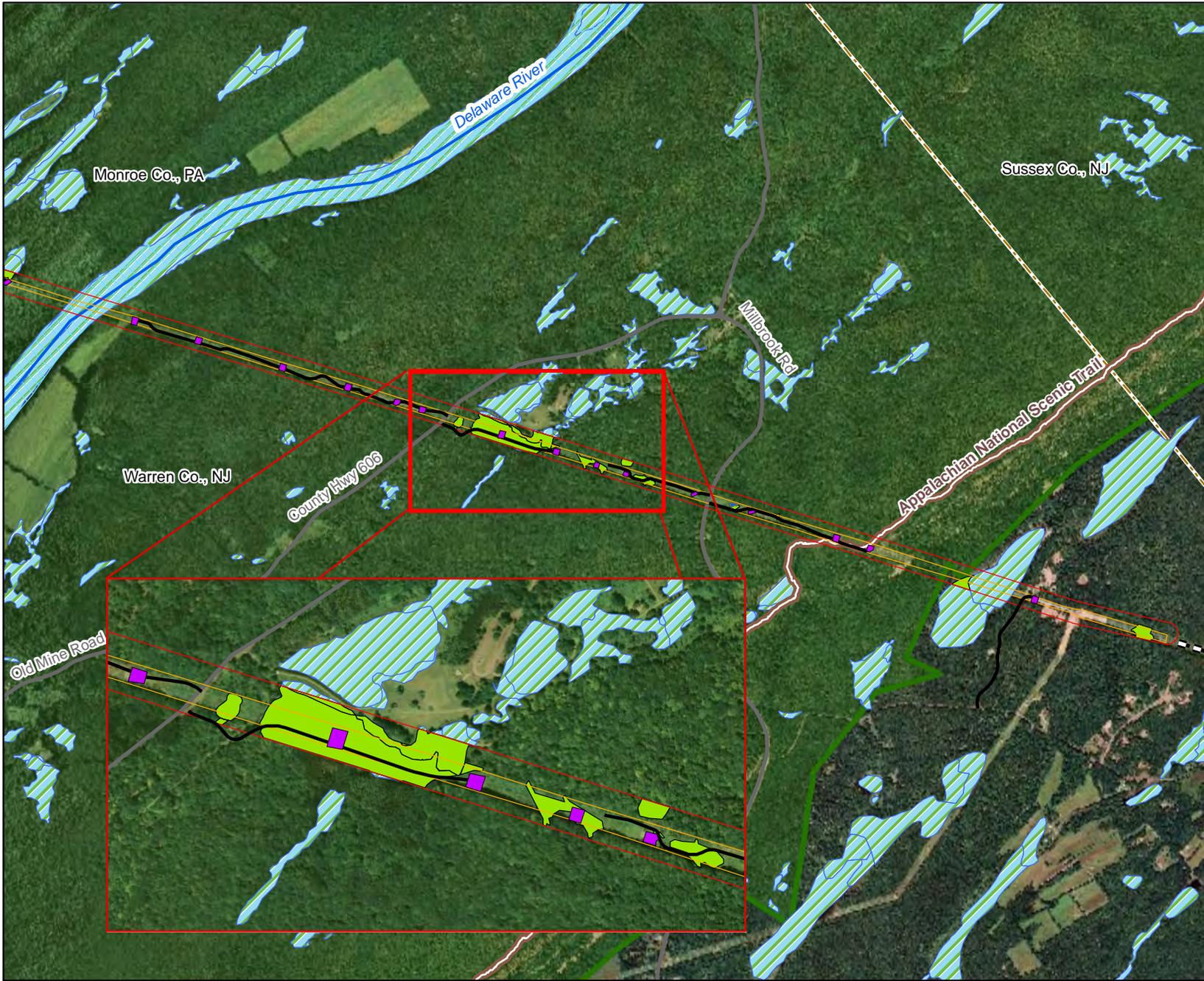
Susquehanna to Roseland
Transmission Line Proposal
and
Right-of-Way Request EIS

Figure 3
Alternative 2 Wetlands in Pennsylvania

Source: ESRI Streetmap 2006, Penn State 2010,
ESRI ArcGISonline Map Service 2010,
PennDOT 2011, USGS 2006,
NJ DEP 2008, NWI 1977

Projection: NAD 83 UTM Zone 18N
Date: April, 2012





Legend

- ☆ Substation
- Crane Pad/ Tower Location
- ▭ Outside Study Area
- ▭ Existing ROW in Study Area
- ▭ 350 ft Corridor
- ▭ Appalachian National Scenic Trail
- ▭ Delaware River
- ▭ Proposed Access Road
- ▭ Road
- ▭ Delaware Water Gap National Recreation Area
- ▭ Wetlands within 350ft buffer
- ▭ Wetlands
- ▭ County Line

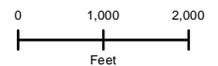


Susquehanna to Roseland
Transmission Line Proposal
and
Right-of-Way Request EIS

Figure 4
Alternative 2 Wetlands in New Jersey

Source: ESRI Streetmap 2006, Penn State 2010,
ESRI ArcGISonline Map Service 2010,
PennDOT 2011, USGS 2006,
NJ DEP 2008, NWI 1977

Projection: NAD 83 UTM Zone 18N
Date: April, 2012



Under alternative 2, the removal of the B-K Line would require constructing access roads, wire pull sites, and the removal of the line; wire pull sites would not be located in wetland areas or in suitable bog turtle habitat. Adjacent upland travel corridors for bog turtles would also require protection under the recovery plan. The construction of access roads and wire pull sites would not be located in areas of upland travel corridors for bog turtles.

Construction of the new S-R Line would transect Arnott Fen; approximately 4.1 acres of the Arnott Fen wetland complex is located within the 350-foot corridor of the proposed ROW. Calcareous fen habitats such as Arnott Fen are highly vulnerable to degradation from direct disturbance and from activities in nearby upland areas. Runoff from road surfaces, disruption of groundwater flow by nearby excavation, sedimentation from construction activity, or direct physical disturbance can lead to changes in the character of the fen habitat, including a decline in overall plant diversity and invasion by non-native species and tall shrubs. Such changes can render the habitat unsuitable for the bog turtle.

No towers or crane pads would be constructed in the fen and the ROW would be selectively cleared of vegetation during construction. Vegetation clearing would be conducted according to a NPS and USFWS-approved vegetation management plan to be developed by the applicant. Selective clearing of incompatible plant species, and low-impact removal of small trees and shrubs would minimize the impacts to wetlands and bog turtle habitat. Post-construction vegetation maintenance under alternative 2 would also be conducted according to the NPS-approved vegetation management plan. Small trees and shrubs to be removed in Arnott Fen would not be removed by heavy equipment, but would be cleared using low-impact tree-clearing methods and would be felled by hand, which would require a chainsaw and operator (PPL and PSE&G 2008). Generally, herbicides would not be used in wetland areas on NPS lands, unless stump treating for nonnative invasive plants is required. Vegetation clearing and maintenance activities, create a risk of trampling bog turtle nests and inadvertently crushing eggs or individual turtles, particularly if these activities are carried out in the emergent portion of Arnott Fen in mid-May through mid-September. Seasonal restrictions on vegetation maintenance would be implemented during nesting and birthing seasons for bog turtles (typically between April and September) which should avoid the loss of eggs and individual turtles.

The removal of incompatible shrubs or small trees and continued vegetation maintenance could result in the conversion of Arnott Fen to emergent wetlands. As a result, of vegetation maintenance activities, the open canopy areas would increase solar exposure, allowing native herbaceous vegetation to become re-established. Because the bog turtle's habitat is highly susceptible to the natural succession of trees encroaching on wetlands, this could actually increase the amount of emergent habitat available for bog turtle nesting and basking. As a result, vegetation maintenance in Arnott Fen under alternative 2 may help to meet the long-term goal for the bog turtle specified in the Recovery Plan (USFWS 2001) that requires protection against succession to woody vegetation in bog turtle habitat.

Construction and clearing within Arnott Fen would be minimized; however, activities could potentially allow invasive plant species to colonize the fen. Suitable bog turtle habitat could be degraded by invasive plants establishing in disturbed areas adjacent and within the fen following construction. Invasive plant management according to the NPS-approved vegetation management plan would reduce the likelihood of invasive species encroachment into Arnott Fen as a result of the implementation of alternative 2. An access road proposed for construction immediately south of Arnott Fen could act as an attractive nuisance and/or recreation opportunity, by inviting visitors to illegally access areas inhabited by the bog turtle. Visitor encounters with the turtles could lead to the illegal collection of bog turtles. The greatest threat to the survival of the bog turtle includes collection for the wildlife trade and the loss, degradation, and fragmentation of its habitat, including the threat of invasive wetland plants that reduce the value of bog turtle habitat (USFWS 2001). In addition, adverse impacts could occur if bog turtles travel in the upland

community, where there is a risk of direct mortality from contact with construction vehicles and equipment.

Although no new towers would be placed within Arnott Fen, new towers would be constructed on either side of the fen (one of these towers would be placed in the ROW approximately 300 feet from the perimeter of the fen). Placement of new towers would not require blasting; however, the tower construction would require excavation and drilling adjacent to the fen in rare and unique geologic (limestone) resources. Drilling has the potential to connect existing solution features in the limestone and possibly change the groundwater flow path. The probabilities of boreholes intercepting solution features (which typically make up only 1 to 10% of the saturated rock mass, and usually closer to 1%) is extremely low, and a cross-connection over the short depth of the foundation drilling is unlikely to change the greater groundwater flow regime, especially since the boreholes will be filled by grouting for foundations. As a result an alteration in hydrologic regime is considered discountable since it is very unlikely that shallow drilling would intercept the water table.

Specified long-term protection for the bog turtle requires that the habitat areas used by a population are protected against adverse effects from filling or excavation of wetlands, pollution from point and non-point sources, and invasive plant species (USFWS 2001). Alternative 2 could result in direct and indirect adverse impacts on bog turtles within the Arnott Fen wetland; however, avoidance of bog turtle habitat is contained within the current routing described in alternative 2 and avoidance of bog turtle habitat through the implementation of mitigation measures such as pre-construction surveys, avoidance, time of year restrictions and others described in Section 5.7: Proposed Mitigation Measures along with a NPS-approved vegetation management plan would minimize impacts to bog turtle and potential bog turtle habitat. Detailed conservation measures have been identified along with bog turtle conservation zones, with the intent of protecting and recovering known bog turtle populations within the northern range of this species (USFWS 2001, appendix A) and in the mitigation measures discussed in Section 5.7: Proposed Mitigation Measures. ***Therefore, alternative 2 may affect, but is not likely to adversely affect the bog turtle and bog turtle habitat.***

5.7 PROPOSED MITIGATION MEASURES

Various measures to specifically protect bog turtles as a result of this project would be undertaken in accordance with the *Bog Turtle (Clemmys muhlenbergii) Northern Population Recovery Plan* (USFWS 2001), and the identified bog turtle conservation zones presented in Appendix A. If construction requirements in the final design conflict with mitigation measures, the applicant would be required to work with the USFWS and the NPS to determine additional measures to avoid impacts. Prior to any ground-disturbing or vegetation clearing activities, pre-construction surveys for bog turtles would be conducted by a qualified bog turtle surveyor. Surveys conducted prior to vegetation clearing activities are expected to be efficient at reducing direct impacts on special-status species because surveys would identify the presence of bog turtles before site preparation and construction are initiated. Construction monitoring will be conducted both during construction and during post-construction vegetation maintenance. If bog turtle or bog turtle habitat is found in any of the above mentioned surveys, the location or suitable habitat would be flagged, the USFWS would be contacted, and the habitat would be avoided during construction.

Mitigation measures that would avoid direct impacts on the bog turtle would be the most efficient measures and would include time-of-year restrictions, and habitat preservation and habitat restoration components. Some mitigation measures, such as modifying the location of towers and access roads, may not be possible and other measures, such as road closures and/or patrols, may not be effective at some locations; however, mitigation measures would be implemented to the extent practical to avoid adverse effects on special-status species. These actions would be undertaken, where appropriate, as mitigation

measures for the preferred alternative to minimize impacts to the bog turtle. The efficacy of mitigation techniques varies widely between mitigation measures, and is considered based on best professional judgment when determining the impacts of each alternative on each special-status species. Specific mitigation measures have been developed by the applicant for alternative 2 and are described in detail in *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project* (PSE&G 2010).

Coordination with appropriate federal and state agencies would continue in the future. The applicant has also adopted specific conservation measures as described under each applicable state in the paragraphs that follow.

5.7.1 Mitigation Measures for NPS Property

To avoid impacts to the bog turtle and its habitat, conservation measures were developed by the PSE&G in cooperation with the USFWS-NJFO (tracking # 2008-I-0319) as described in *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project* (PSE&G 2010). These conservation measures are mitigation that will be implemented under alternative 2 in New Jersey and Pennsylvania and will be incorporated into the construction plans for wetland 44, portion 1, near Van Campen Brook and Arnott Fen. Despite the negative Phase II survey for wetland 44, portion 1, it will be treated as confirmed bog turtle habitat due to its proximity to a known site. Adherence to the following measures will be required as a condition of any NPS permit authorizing the project. If construction requirements in the final design conflict with mitigation measures, the applicant would be required to work with the USFWS and the NPS to determine additional measures to avoid impacts.

1. The applicant has agreed that no permanent structures (including but not limited to tower footings and new or improved access roads) would be located within 300 feet of confirmed bog turtle habitat. All confirmed bog turtle habitat, plus a 150-foot buffer, would be flagged prior to construction and would remain flagged during all work in that span. No temporary disturbances (including but not limited to removal of existing towers or other structures, use of motorized equipment, earth disturbance, and equipment/materials storage areas) would take place within flagged areas. If vegetation must be managed within flagged areas (during or after construction), PSE&G and PPL will follow the conservation measures detailed in PSE&G's June 20, 2012 letter to the USFWS (or the most current version of this agreement, with future updates to be approved by the NPS for areas under NPS jurisdiction). If towers and access roads are within 300 feet of bog turtle habitat in the final design, the applicant would be required to work with the USFWS and the NPS on additional measures to avoid impacts to the bog turtle. The northern access road through Arnott Fen was removed to avoid significant impacts to bog turtles.
2. In any span containing confirmed bog turtle habitat, a double row of silt fencing would be installed around all work areas (e.g., areas for installation of new tower footings or other structures, removal of existing towers or other structures, construction of new or improved access roads, use of motorized equipment, earth disturbance, equipment/materials storage areas, other temporary work spaces) prior to the start of any construction. As described in mitigation measure 1 above, all work areas would be at least 150 feet from confirmed bog turtle habitat (i.e., outside of flagged areas). Work areas would be inspected by a recognized, qualified bog turtle surveyor concurrent with fence installation, to ensure no bog turtles are present. In any such span, a recognized, qualified bog turtle surveyor would inspect work areas and flagged areas daily for any work between April 1 and October 15. The recognized, qualified bog turtle surveyor would take notes and color photographs of the construction area and surrounding wetlands on a regular schedule and during any significant events or unusual circumstances.

3. Where existing paved or unpaved roads within 300 feet of confirmed bog turtle habitat would be utilized for access without any road enlargement or improvement, a double row of silt fencing would be installed along the road, concurrent with inspection by a recognized, qualified bog turtle surveyor to ensure no bog turtles are present. A recognized, qualified bog turtle surveyor would inspect the fence for signs of bog turtle activity at least weekly for any use between April 1 and October 15. Where appropriate, directional funnels would be used to facilitate movement of turtles through culverts between wetland areas; plans for any such turtle crossing would be provided to the USFWS for review and approval. In areas with permanent access roads, gates or other physical barriers would be added to access road entrances to discourage illegal collection, all-terrain vehicle use, and other human disturbances.
4. Silt fencing would be buried six inches into the ground, using large stakes. Silt fencing would be installed by non-mechanical means. No equipment staging, vehicle access, or other activities would be permitted outside of the approved (silt fenced) construction limits, other than for vegetation management as described in mitigation measure 1 above. All silt fencing would be maintained year-round and would be inspected and maintained daily. Inspection and maintenance logs would be kept and provided to the USFWS and/or the NPS upon request.
5. Contractors will designate one or two points of contact to be trained by a recognized, qualified bog turtle surveyor on the identification of bog turtles and reporting protocols if a bog turtle is observed in or near a work area. All other contractor staff working in spans with confirmed bog turtle habitats will be notified of sensitive wetlands, but the bog turtle will not be discussed (to minimize the release of sensitive locational information). As part of the overall environmental training, all contract staff slated to work in spans with confirmed bog turtle habitat will be instructed in the implementation of applicable conservation measures, and a protocol to report any terrestrial wildlife (*e.g.*, mammals, herpetofauna) observed in work areas. The USFWS will be provided a copy of the protocol for review and approval.
6. As of 5 August 2009, a guidance advisory bulletin has been issued by USFWS for all human activities occurring within bog turtle habitat. As long as the advisory guidance is in effect, all monitoring, flagging, and vegetation management activities occurring within 150 feet of confirmed bog turtle habitat would be conducted in accordance with issued decontamination protocols. These practices apply to all equipment and personnel working within bog turtle habitats. Pursuant to the advisory bulletin, if any dead bog turtles are encountered during project implementation, turtles would be collected and shipped for analysis to the National Wildlife Health Center after the USFWS and the New Jersey Endangered and Nongame Species Program have been notified and apprised of the circumstance under which the turtle was found.
7. At periodic intervals (approximately 300 to 500 feet) along the construction corridor, signage would be placed along the limits of the workspace indicating that work is occurring in proximity to designated rare species habitat. The signs would include representative photographs of bog turtles as well as a summary of the protocol to follow should one be encountered within the workspace. Signage would be removed upon completion of work in each span containing confirmed bog turtle habitat. While signage is in place, PSE&G and PPL would limit access to work crews and agency/company staff. PSE&G and PPL would inform all personnel that locations of confirmed bog turtle habitat are considered confidential and should not be disclosed verbally, in print, or electronically.
8. If any bog turtle, live or dead, is found during habitat flagging, silt fence installation, construction, vegetation management or any other phase of project implementation, PSE&G and PPL would stop work and contact the NPS and the USFWS immediately. PSE&G, PPL, and the

applicant's contractors, employees, or representatives would not move any bog turtle except to avoid imminent danger to people or the turtle.

9. Steps will be implemented to minimize human disturbance of bog turtle habitat as a result of the proposed new access road to the ROW from Community Drive. If this will be a temporary road, the applicant will be required to restore and plant it with shrubs and trees to obscure it following construction. If this is to be a permanent access road, the applicant will be required to install gates and signage to enforce an area closure.
10. Any work in the vicinity of Arnott Fen will take place between November 1 and March 31, when bog turtles are hibernating. The applicant will not be permitted to fell any trees into the fen. Stringent sediment and erosion controls will be implemented for tree clearing and ground disturbance upgradient of Arnott Fen.
11. The applicant will be required to thoroughly wash construction equipment offsite before use within 500 feet of bog turtle habitat.

5.8 CUMULATIVE EFFECTS ANALYSIS

Cumulative effects are those effects of future state or private activities, not involving federal activities, which are reasonably certain to occur within the action area of the federal action subject to consultation [50 CFR §402.02]. This definition applies only to Section 7 analyses and should not be confused with the broader use of this term in the National Environmental Policy Act or other environmental laws. Future actions can affect wetlands and ultimately influence conditions that may offer suitable habitat for bog turtle. Wetland ecosystems although generally protected within NPS boundaries may be threatened directly and indirectly by alterations and permanent loss from adjacent development, invasive plant species colonization, and other habitat pressures such as hydrology and water quality changes related to stormwater runoff, erosion and sedimentation. These pressures can result in the loss of wetland functions or values, especially in sensitive habitats like calcareous fens that are uniquely characterized by the geology, hydrology and vegetative communities that also define preferred bog turtle habitat.

In the vicinity of the parks, the following road and utility projects would result in adverse cumulative impacts on wetlands that could also affect bog turtles if suitable habitat exists: the Pennsylvania Department of Transportation State Road 2001 road project (road reconstruction), the Tennessee Gas Line Proposal (addition to an existing gas pipeline), the Columbia Gas Transmission Company pipeline (replacement of an existing gas pipeline), and the Northeast Supply Link Expansion (Palmerton Loop gas pipeline). These projects would result in adverse impacts on wetlands from vegetation clearing and trimming activities as well as disturbance of wetland areas.

Cumulative impacts on the bog turtle from future projects would be adverse as a result of the projects discussed above. When impacts on the bog turtle as a result of alternative 2 are combined with the cumulative projects, an overall adverse cumulative impact would be expected on bog turtles and bog turtle habitat within the NPS boundaries.

5.9 CONCLUSION

The information contained within this BA allows for the conclusion of an effect determination for alternative 2 in regard to the bog turtle listed under Section 7 of the ESA described above.

Alternative 2 *may affect, but is not likely to adversely affect bog turtle habitat*, and subsequently the turtle itself, which is a federally threatened and state-listed endangered species. A Phase I and Phase II bog turtle survey was previously conducted along alternative 2 and, therefore, no additional studies for the bog turtle are anticipated to be required in support of the conclusion for this alternative. This determination is made based upon and supported by the following information:

- There are calcium rich soils/bedrock in the area at Arnott Fen and drilling will be required approximately 750 feet from the western edge of the fen in unique geologic limestone formations.
- The potential for direct mortality of the bog during construction activities which would be considered a take under ESA, could constitute an adverse impact on the bog turtle as a result of alternative 2. However, due to pre-construction surveys and construction monitoring by qualified bog turtle surveyors, direct mortality is unlikely.
- There are other emergent and scrub-shrub wetlands within the project area that would be affected by the preferred alternative; however, based on Phase I and Phase II Bog Turtle Surveys it was determined that none of the other wetlands either possessed bog turtle habitat or supported populations of bog turtles.
- Vegetation maintenance activities would be conducted by hand clearing only (no machinery) outside of restricted periods and may enhance existing habitat and potentially increase habitat for the bog turtle by preventing the fen habitat to succeed to a forested wetland, benefitting bog turtles by preventing succession in the fen.

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CHAPTER 7: LIST OF CONTACTS AND DOCUMENT PREPARERS

Suzanne E. Boltz – Project Manager with 22 years of experience. EA Engineering, Science, Technology, Inc. 15 Loveton Circle, Sparks, Maryland 21152; Phone (410) 329-5143; email sboltz@eaest.com

Mary Alice Koeneke – Environmental Scientist IV with 34 years of experience. EA Engineering, Science, Technology, Inc. 15 Loveton Circle, Sparks, Maryland 21152; Phone (410) 771-4950; email makoeneke@eaest.com

Sarah T. Koser - Environmental Scientist III with 12 years of experience. EA Engineering, Science, Technology, Inc. 15 Loveton Circle, Sparks, Maryland 21152; Phone (410) 771-4950; email skoser@eaest.com

APPENDIX A

BOG TURTLE CONSERVATION ZONES

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BOG TURTLE CONSERVATION ZONES

The following bog turtle conservation zones have been designated by USFWS (2001) with the intent of protecting and recovering known bog turtle populations within the northern range of this species.

ZONE 1

Zone 1 includes the wetland and visible spring seeps occupied by bog turtles. Bog turtles rely upon different portions of the wetland at different times of year to fulfill various needs; therefore, this zone includes the entire wetland (the delineation of which will be scientifically based), not just those portions that have been identified as, or appear to be, optimal for nesting, basking or hibernating. In this zone, bog turtles and their habitat are most vulnerable to disturbance; therefore, the greatest degree of protection is necessary. Within this zone, the following activities are likely to result in habitat destruction or degradation and should be avoided. These activities (not in priority order) include:

- development (e.g., roads, sewer lines, utility lines, storm water or sedimentation basins, residences, driveways, parking lots, and other structures)
- wetland draining, ditching, tiling, filling, excavation, stream diversion and construction of impoundments
- heavy grazing
- herbicide, pesticide or fertilizer application
- mowing or cutting of vegetation
- mining
- delineation of lot (e.g., for development, even if the proposed building or structure will not be in the wetland)

Some activities within Zone 1 may be compatible with bog turtle conservation but warrant careful evaluation on a case-by-case basis:

- light to moderate grazing
- non-motorized recreational use (e.g., hiking, hunting, fishing)

ZONE 2

The boundary of Zone 2 extends at least 300 feet from the edge of Zone 1 and includes upland areas adjacent to Zone 1. Activities in this zone could indirectly destroy or degrade wetland habitat over the short or long-term, thereby adversely affecting bog turtles. In addition, activities in this zone have the potential to cut off travel corridors between wetlands occupied or likely to be occupied by bog turtles, thereby isolating or dividing populations and increasing the risk of turtles being killed while attempting to disperse. Some of the indirect effects to wetlands resulting from activities in the adjacent uplands include:

- changes in hydrology (e.g., from roads, detention basins, irrigation, increases in impervious surfaces, sand and gravel mining);
- degradation of water quality (e.g., due to herbicides, pesticides, oil and salt from various sources including roads, agricultural fields, parking lots and residential developments);

- acceleration of succession (e.g., from fertilizer runoff); and
- introduction of exotic plants (e.g., due to soil disturbance and roads).

Zone 2 acts as a filter and buffer, preventing or minimizing the effects of land-use activities on bog turtles and their habitat. This zone is also likely to include at least a portion of the groundwater recharge/supply area for the wetland. Activities that should be avoided in this zone due to their potential for adverse effects to bog turtles and their habitat include:

- development (e.g., roads, sewer lines, utility lines, storm water or sedimentation basins, residences, driveways, parking lots, and other structures)
- mining
- herbicide application
- pesticide or fertilizer application
- farming (with the exception of light to moderate grazing - see below)
- certain types of stream-bank stabilization techniques (e.g., rip-rapping)
- delineation of lot (e.g., for development, even if the proposed building or structure will not be in the wetland)
- Careful evaluation of proposed activities on a case-by-case basis will reveal the manner in which, and degree to which activities in this zone would affect bog turtles and their habitat.

Assuming impacts within Zone 1 have been avoided, evaluation of proposed activities within Zone 2 will often require an assessment of anticipated impacts on wetland hydrology, water quality, and habitat continuity. Activities that are likely to be compatible with bog turtle conservation but that should be evaluated on a case-by-case basis within this zone include:

- light to moderate grazing
- non-motorized recreational use (e.g., hiking, hunting, fishing)
- mowing or cutting of vegetation

ZONE 3

Zone 3 includes upland, wetland, and riparian areas extending either to the geomorphic edge of the drainage basin or at least one-half mile beyond the boundary of Zone 2. Despite the distance from Zone 1, activities in these areas have the potential to adversely affect bog turtles and their habitat. This particularly applies to activities affecting wetlands or streams connected to or contiguous with Zone 1, because these areas may support undocumented occurrences of bog turtles and/or provide travel corridors. In addition, some activities (e.g., roads, groundwater withdrawal, water/stream diversions, mining, impoundments, dams, ~~pump-and-treat~~ activities) far beyond Zone 1 have the potential to alter the hydrology of bog turtle habitat; therefore, another purpose of Zone 3 is to protect the ground and surface water recharge zones for bog turtle wetlands. Where the integrity of Zone 2 has been compromised (e.g., through increases in impervious surfaces, heavy grazing, channelization of stormwater runoff), there is also a higher risk of activities in Zone 3 altering the water chemistry of bog turtle wetlands (e.g., via nutrient loading, sedimentation, and contaminants). Activities occurring in this zone should be carefully assessed in consultation with the USFWS and/or appropriate State wildlife agency to determine their potential for adverse effects to bog turtles and their habitat. Prior to conducting activities that may directly

or indirectly affect wetlands, bog turtles and/or bog turtle habitat surveys should be conducted in accordance with accepted survey guidelines.

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APPENDIX B

CONSULTATION LETTERS

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COOPERATING AGENCY CORRESPONDENCE

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United States Department of the Interior

NATIONAL PARK SERVICE
Delaware Water Gap National Recreation Area
Bushkill, Pennsylvania 18324

IN REPLY REFER TO:

D5015

FEB 07 2011

Mr. Michael Horne, Refuge Manager
Wallkill River, Cherry Valley, Shawangunk Grasslands
National Wildlife Refuge Complex
1547 County Route 565
Sussex, New Jersey 07461

Dear Mr. Horne:

We would like to invite the U.S. Fish and Wildlife Service (USFWS) to participate as a cooperating agency in the National Park Service's environmental review of the Susquehanna to Roseland Transmission Line project.

As you are aware, pursuant to the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4332(2)(C), the National Park Service (NPS) is preparing an Environmental Impact Statement (EIS) for the evaluation of construction and right-of-way (ROW) permits requested in relation to the proposed Susquehanna (Berwick, Pennsylvania) to Roseland, New Jersey 500,000 volt (500 kV) Transmission Line project. Construction is proposed for a double circuit 500 kV line, although one line will only be energized to 230 kV at the time of project completion. The applicant, (a consortium of Utilities, PPL and PSE&G), has received qualified project approvals from the respective state utility commissions, the Pennsylvania Public Utility Commission and New Jersey Board of Public Utilities. No environmental permits from regulatory agencies have been issued to date.

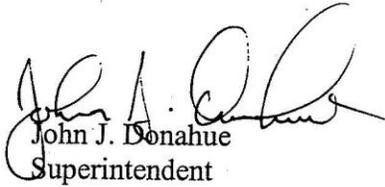
As part of the NEPA process the NPS will seek consultation with the USFWS New Jersey and Pennsylvania Field Offices under Section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1531 et seq. , ESA) and the Fish and Wildlife Coordination Act (16 U.S.C. 661-667e; the Act of March 10, 1934; Ch. 55; 48 Stat. 401), as amended. But the USFWS has additional interests in this review. As proposed, the project would cross lands and waters of the United States in the Delaware Water Gap National Recreation Area (DEWA), the Middle Delaware National Scenic and Recreational River (MDSR), and the Appalachian National Scenic Trail (APPA). Some alternatives, developed as part of the NEPA process, would also cross lands within the designated boundary of the Cherry Valley National Wildlife Refuge (CVNWR).

The Council on Environmental Quality (CEQ) regulations addressing cooperating agencies status (40 C.F.R. §§ 1501.6 & 1508.5) implement the NEPA mandate that federal agencies responsible for preparing NEPA analyses and documentation do so "in cooperation with State and local

governments" and other agencies with jurisdiction by law or special expertise. (42 U.S.C. §§ 4331(a), 4332(2)). Because of your expertise and local knowledge of the resources within the CVNWR we request your participation as a cooperator in the development and review of the EIS. We expect that coordination in this manner will result in improved understanding of each of our respective bureaus' roles and will result in the most informed decision for protecting and preserving the valuable natural, cultural, scenic and recreational resources of these units. In addition, our close association as sister agencies under the same Assistant Secretary makes our close cooperation even more necessary. In this manner USFW can meet its obligations for ecological services and as a land manager.

As part of the project team, the EIS files are available for your review. Because the schedule continues to be an important consideration, we encourage you to arrange a time with our staff to review and make copies of the materials you may need for the environmental review. We look forward to your response. If you have any questions please call Superintendent Donahue at (570) 426-2418 or Amanda Stein, project manager at (570) 426-2472.

Sincerely,



John J. Donahue
Superintendent

Delaware Water Gap National Recreation Area &
Middle Delaware National Scenic and
Recreational River
(570) 426-2418



Pamela Underhill
Superintendent
Appalachian National Scenic Trail
(304) 535-6279

cc:

Mr. Marvin Moriarty, Regional Director
Northeast Regional Office
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, Massachusetts 01035-9587

Mr. Dennis Reidenbach, Regional Director
Northeast Regional Office
National Park Service
200 Chestnut Street, Suite 502
Philadelphia, Pennsylvania 19106

Michael Chezik, DOI Office of Environmental Policy and Compliance
Andrew Raddant, DOI Office of Environmental Policy and Compliance
Andrew Tittler, DOI Office of the Solicitor
Eric Davis, U.S. Fish and Wildlife Service
Clint Riley, U.S. Fish and Wildlife Service

Pamela Shellenberger, U.S. Fish and Wildlife Service
Wendy Walsh, U.S. Fish and Wildlife Service
Jennifer McConaghie, National Park Service, NER
Patrick Malone, National Park Service, DSC
Patrick Lynch, National Park Service, DEWA
Kara Deutsch, National Park Service, DEWA
Amanda Stein, National Park Service, DEWA

Denver Service Center - TIC
Attn: SRLINE EIS
12795 West Alameda Parkway
Denver, Colorado 80225-0287



United States Department of the Interior

FISH AND WILDLIFE SERVICE
WALLKILL RIVER NATIONAL WILDLIFE REFUGE COMPLEX
1547 County Route 565
Sussex, New Jersey 07461



March 14, 2011

Mr. John J. Donahue
Superintendent
Delaware Water Gap National Recreation Area and
Middle Delaware National Scenic and Recreational River
Bushkill, Pennsylvania 18324

Ms. Pamela Underhill
Superintendent
Appalachian Trail Park Office
P O Box 50
Harpers Ferry, West Virginia 25425

Dear Mr. Donahue and Ms. Underhill:

Thank you for your February 7, 2011 letter inviting the U.S. Fish and Wildlife Service to become a cooperating agency in the National Park Service's review under the National Environmental Policy Act of the applications submitted to it for the Susquehanna to Roseland 500-IV transmission line project.

As some alternative routes for the project would cross lands within the acquisition boundary of the Cherry Valley NWR, and as FWS also has interests and expertise to offer concerning wildlife and habitat throughout the study area, we are happy to serve as a cooperating agency. We have already been reviewing the drafts of the EIS chapters made available to us.

We understand that the NPS has a cost-recovery agreement with the permit applicants. It would greatly enhance our ability to provide expertise and review capacity to NPS beyond the bounds of our standard ESA consultation if we could execute an Interagency Agreement for the acquisition of the expertise the FWS will provide, for which cost NPS could be reimbursed. This would allow us to devote additional hands to the necessary review.

Sincerely,

Michael Horne
Refuge Manager
Wallkill River, Cherry Valley
and Shawangunk Grasslands NWR

Cc: Marvin Moriarty, Regional Director
Susan McMahon, Deputy Regional Chief
Dennis Reidenbach, Regional Director
Michael Chezik, DOI Office of Environmental Policy and Compliance
Andrew Raddant, DOI Office of Environmental Policy and Compliance
Andrew Tittler, DOI Office of the Solicitor
Eric Davis, U.S. Fish and Wildlife Service
Clint Riley, U.S. Fish and Wildlife Service
Pamela Shellenberger, U.S. Fish and Wildlife Service
Wendy Walsh, U.S. Fish and Wildlife Service
Jennifer McConaghie, National Park Service, NER
✓ Patrick Malone, National Park Service, DEWA
Patrick Lynch, National Park Service, DEWA
Kara Deutsch, National Park Service, DEWA
Amanda Stein, National Park Service, DEWA
Denver Service Center-TIC, attn: SRLINE EIS

ENDANGERED SPECIES ACT SECTION 7 CONSULTATION

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850



October 16, 2008

Sue Davis
The Louis Berger Group, Inc.
75 2nd Avenue
Suite 700
Needham, MA 02494

RE: USFWS Project #2008-0677

Dear Ms. Davis:

This responds to your letter of August 13, 2008 and our various email and telephone correspondences since then regarding the proposed PPL Electric Utilities Susquehanna – Roseland 500 kV Transmission Line (Route B) project, located in Luzerne, Lackawanna, Wayne, Pike and Monroe 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.

The transmission line is located within the range of **two** federally listed species, the endangered Indiana bat (*Myotis sodalis*) and threatened bog turtle (*Clemmys muhlenbergii*). Additionally, the transmission line is located within the range of the bald eagle (*Haliaeetus leucocephalus*), a federally protected species. Future development on the site should be evaluated with respect to these species based on the information provided below.

Indiana Bat

Indiana bats hibernate in caves and mines during the winter months (November through March), and use a variety of upland, wetland and riparian habitats during the spring, summer and fall. Indiana bats usually roost in dead or living trees with exfoliating bark, or living or dead trees with crevices or cavities. Female Indiana bats form nursery colonies under the exfoliating bark of dead or living trees, such as shagbark hickory, in upland or riparian areas. However, a variety of tree species such as black birch, red and white oak, and sugar maple are also used.

Land-clearing, especially of forested areas, may adversely affect Indiana bats by killing, injuring or harassing roosting bats, and by removing or reducing the quality of foraging and roosting habitat. Due to the anticipated impacts of the project to forest habitat, a bat survey of the project

area should be conducted between May 15 and August 15 by a qualified, Fish and Wildlife Service-approved biologist (see enclosed list) using the enclosed *Indiana Bat Mist Netting Guidelines*. Survey results should be submitted to the Service for review and concurrence.

In addition, if any natural caves or abandoned mines occur within a project area, it is possible that Indiana bats or other bat species may be using them during hibernation or potentially as summer roost sites. If potential Indiana bat hibernacula (*i.e.*, caves or abandoned mines) occur within a project area, they should be surveyed by a qualified biologist. Prior to conducting any survey, however, the Pennsylvania Game Commission should be contacted to determine whether or not they have surveyed the cave/mine in the past. If adequate surveys have been conducted in the recent past, this may preclude the need to conduct additional surveys. Survey results should be submitted to the Service for review and concurrence.

Bog Turtle

Bog turtles inhabit 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. Bog turtles usually occur in small, discrete populations occupying suitable wetland habitat dispersed along a watershed. The occupied "intermediate successional stage" wetland habitat is usually a mosaic of micro-habitats ranging from dry pockets, to areas that are saturated with water, to areas that are periodically flooded. Some wetlands occupied by bog turtles are located in agricultural areas and are subject to grazing by livestock.

As you are aware, bog turtles are known to be present at the Arnott Fen in Monroe County. An existing transmission line currently runs through this wetland. This portion of your project proposes to take down the existing line crossing the fen and put a new line in its place, with both the existing wires and the new wires strung on the same set of structures using a helicopter. There will still only be one transmission line crossing Arnott Fen (within the same ROW as the current line). However, you also noted that it is possible, due to different structure sizes, the existing ROW will have to be widened up to approximately 50 feet. This possibility is still being evaluated by engineers.

Based on a review of the information supplied to this office, we have determined that construction of the proposed project is not likely to adversely affect the bog turtle. However, should structures need to be located in the wetland and/or the ROW needs to be widened, further consultation with this office will be necessary.

Bald Eagle

Although no bald eagle nests are known to occur in the project area, the proposed project is located within the range of the bald eagle (*Haliaeetus leucocephalus*). Bald eagles typically occur in the vicinity of aquatic ecosystems; they frequent lakes, reservoirs, large rivers (*e.g.*, Delaware River, Juniata River, Susquehanna River), and wetland systems. Their nests are

usually built in large trees within two miles of these features. Because eagles are vulnerable to human disturbance, particularly during the nesting season, nests are often located in relatively remote forested areas.

The Service published a final rulemaking to remove the bald eagle from the federal *List of Endangered and Threatened Wildlife* on July 9, 2007 (*Federal Register*, Vol. 72, No. 130). This rule became effective on August 8, 2007. Although the bald eagle no longer receives protection under the Endangered Species Act, it continues to be protected under the Bald and Golden Eagle Protection Act (Eagle Act) and the Migratory Bird Treaty Act (MBTA). Both acts protect bald eagles by prohibiting killing, selling or otherwise harming eagles, their nests or eggs. The Eagle Act also protects eagles from disturbance. Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

Because bald eagles are continuing to recover and expand their breeding range in Pennsylvania, new eagle nests may be found in previously undocumented locations. Should you become aware of an eagle nest in or near your project area, please refer to the Service's *National Bald Eagle Management Guidelines* for specific measures that should be taken to ensure bald eagles are not disturbed. The Service developed these *Guidelines* to advise landowners, land managers and others who share public and private lands with bald eagles when and under what circumstances the protective provisions of the Eagle Act may apply to their activities. The *Guidelines* include general recommendations for land management practices that will benefit bald eagles; however, the document is intended primarily as a tool to provide those who seek information and recommendations regarding how to avoid disturbing bald eagles. Adherence to the *Guidelines* will benefit individuals, agencies, organizations and companies by helping them avoid violations of the law. The *Guidelines* can be found at <http://www.fws.gov/migratorybirds/baldeagle.htm>. If you have any questions about the *Guidelines* or how they would apply to a particular project, please contact our office.

This response relates only to endangered or threatened species under our jurisdiction, based on an office review of the proposed project's location. No field inspection of the project area has been conducted by this office. Therefore, we suggest contacting a qualified consultant to evaluate your site for potential wetland impacts.

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

If you have any questions regarding these comments, please contact Pamela Shellenberger of my staff at 814-234-4090.

Sincerely,

A handwritten signature in black ink, appearing to read "David", followed by a long horizontal line extending to the right.

David Densmore
Supervisor

Enclosures



United States Department of the Interior



FISH AND WILDLIFE SERVICE

New Jersey Field Office

Ecological Services

927 North Main Street, Building D

Pleasantville, New Jersey 08232

Tel: 609/646 9310

Fax: 609/646 0352

<http://www.fws.gov/northeast/njfieldoffice>

In Reply Refer to:

2008-I-0319

Raymond A. Tripodi, Manager
Corporate Licenses and Permits
PSEG Services Corporation
80 Park Plaza
Newark, New Jersey 07102-4194

MAR 17 2008
PROTECTED INFORMATION
 CONFIDENTIAL

Dear Mr. Tripodi:

The U.S. Fish and Wildlife Service (Service) has reviewed your February 20, 2008 request for information on the presence of federally listed endangered and threatened species in the vicinity of PSEG's proposed Roseland to Bushkill Electric Transmission Line to be located in Morris, Sussex, and Warren Counties, New Jersey. The proposed project involves installation of 45 miles of new 500-kV overhead electric transmission lines along an existing 150-foot-wide right-of-way (ROW) in 15 municipalities. The project also involves construction of two new switching stations, in Jefferson and East Hanover Townships, Morris County. The proposed station sites comprise approximately 23 acres in East Hanover and 142 acres in Jefferson; these areas are currently wooded.

AUTHORITY

This response is pursuant to Section 7 the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) (ESA) to ensure the protection of federally listed endangered and threatened species. These comments do not preclude separate review and comments by the Service pursuant to the National Environmental Policy Act of 1969 as amended (83 Stat. 852; 42 U.S.C. 4321 *et seq.*); the Bald and Golden Eagle Protection Act (54 Stat. 250; 16 U.S.C. 668-668d); or the December 22, 1993 Memorandum of Agreement among the U.S. Environmental Protection Agency, New Jersey Department of Environmental Protection (NJDEP), and the Service, if project implementation requires a permit from the NJDEP pursuant to the New Jersey Freshwater Wetlands Protection Act (N.J.S.A. 13:9B *et seq.*).

FEDERALLY LISTED SPECIES

Indiana Bat

The project area is located within the geographic range of the federally listed (endangered) Indiana bat (*Myotis sodalis*). Most of the ROW, and the proposed Jefferson Station, are located in foraging habitats used by Indiana bats in spring and fall, before and after hibernation. Portions of the ROW, and the proposed Jefferson and East Hanover Stations, are located within the foraging ranges of known Indiana bat maternity colonies. Indiana bats from these maternity colonies may forage and roost in the project area during the summer breeding season. A reproductive female from one of these maternity colonies was previously captured within the ROW in Rockaway Township, Morris County. To date, Indiana bats have not been documented along portions of the ROW west of Newton, Sussex County, but this western section of the project is within the potential range of this species. Additional information about the Indiana bat is enclosed.

The Service offers the following preliminary recommendations to protect the Indiana bat.

1. Seasonally restrict tree clearing from April 1 to September 30 at the proposed East Hanover Station, and along the ROW in Hardwick Township (Warren County), Stillwater and Fredon Townships and Newton (Sussex County), and East Hanover Township (Morris County).
2. Seasonally restrict tree clearing from April 1 to November 15 at the proposed Jefferson Station, and along the ROW in all other municipalities not listed in #1, above.
3. Identify any 1-mile segments of the ROW (each approximately 18 acres) where proposed tree clearing totals over 6 acres. For any such segments, provide the Service with project plans showing the locations and acreage of proposed tree clearing, as well as photographs and a characterization of wooded areas to be cleared (*e.g.*, typical tree species and sizes; understory structure).
4. Preserve at least 150-foot wooded upland buffers around wetlands and open waters at the proposed station locations.
5. Minimize tree clearing at the proposed station locations, preferentially preserving trees that provide suitable roosts for Indiana bats (see enclosed list). If the station footprint will not occupy the entire property, seek to maintain at least 24 suitable roost trees per acre, and consider placing portions of the property not needed for station development under conservation easement.

6. Provide the Service with project plans for the proposed stations, showing the locations and acreage of proposed tree clearing, as well as photographs and a characterization of wooded areas to be cleared (e.g., typical tree species and sizes, under story structure).

Upon review of the project information requested above, the Service may request a site visit and may recommend mist net and telemetry studies to determine bat use of particular areas. If recommended, mist netting must be carried out by a recognized, qualified surveyor (see enclosed list) between May 15 and August 15 according to Service guidelines (enclosed). The Service will work cooperatively with PSEG to identify and refine conservation measures necessary to avoid adverse effect to the Indiana bat.

Bog Turtle

Two known occurrences of the federally listed (threatened) bog turtle (*Clemmys muhlenbergii*) are located along the ROW, within Segments 66/1-66/2 and 48/4-49/1 (reference is to the IGDS field in the GIS file provided with your February 20, 2008 letter). The following eleven segments of the ROW contain areas of potential bog turtle habitat previously identified by the NJDEP.

42/1-42/2	58/1-58/2
42/2-42/3	59/1-59/2
43/2-43/3	55/3-55/4
52/5-53/1	55/4-55/5
53/1-53/2	59/4-60/1
53/5-53/6	

Additional areas of potential habitat along the ROW may have been previously identified by PSEG during surveys conducted under your NJDEP Freshwater Wetland General Permit for vegetation maintenance. However, other portions of the ROW may not have been surveyed for bog turtle habitat to date. Where present in the ROW, bog turtles may be disturbed or injured by the proposed construction activities, and may be adversely impacted by any temporary or permanent impacts to wetlands including clearing, filling, draining, shading, and changes in erosion, sedimentation, water quality, or surface or groundwater hydrology. Therefore, the Service requests that a recognized, qualified surveyor (see enclosed list) inspect (i.e., Phase 1 survey) all scrub/shrub and emergent wetlands in the ROW that have not been previously surveyed for the presence or absence of bog turtle habitat. Guidance for performing bog turtle habitat surveys is enclosed. Surveyors must avoid stepping on the tops of hummocks because this can destroy turtle nests and eggs. The results of any survey, whether showing presence or absence of bog turtle habitat, must be forwarded to this office for review; please include photographs and the qualifications of the surveyor(s).

The Service recommends that PSEG adopt the following conservation measures for all identified areas of known and potential bog turtle habitat along the ROW.

1. Employ a recognized qualified bog turtle surveyor to mark the known and potential bog turtle habitat in the field, clearly flagging these areas including a 150-foot buffer. Remove all flagging when work is completed in the area.
2. Instruct workers to avoid stepping on hummocks and tussocks when working in flagged wetlands, to avoid the possibility of crushing turtle nests or eggs.
3. Prohibit use of motorized vehicles within flagged wetlands.

Phase 2 (visual) surveys and/or additional conservation measures may be necessary if the above recommendations cannot be adopted. Phase 2 surveys must be carried out at specific times between April 15 and June 15. Additional information on the bog turtle is enclosed.

MIGRATORY BIRDS

The Migratory Bird Treaty Act (40 Stat. 755; 16 U.S.C. 703-712) prohibits the take of migratory birds, their parts, nests, and eggs, even when incidental to an otherwise lawful activity. To minimize avian electrocution and collision risks, the Service recommends constructing the proposed new power line and stations in accordance with the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*. If PSEG has not already done so, the Service also recommends preparation of an Avian Protection Plan (APP). Both the *Suggested Practices* document and guidance for preparing APPs are available from the Avian Powerline Interaction Committee (<http://www.aplic.org/>).

CONCLUSION

The proposed project may adversely affect the federally listed Indiana bat and/or bog turtle. Therefore, further consultation with the Service is necessary pursuant to Section 7 of the ESA. Through the informal consultation process, the Service will work cooperatively with PSEG to avoid adverse effects to federally listed species. In addition, the Service appreciates the cooperation of PSEG in minimizing hazards to migratory birds.

Except for the above-mentioned species, no other federally listed or proposed threatened or endangered flora or fauna are known to occur within the vicinity of the proposed project. If additional information on listed and proposed species becomes available or if project plans change, this determination may be reconsidered.

Please refer to our web site at <http://www.fws.gov/northeast/njfieldoffice/Endangered/> for current lists of federally listed and candidate species in New Jersey. The web site also provides a link to the National Bald Eagle Management Guidelines, and contacts for obtaining current information regarding State-listed and other species of concern from the New Jersey Natural Heritage and Endangered and Nongame Species Programs.

Please contact Wendy Walsh at (609) 383-3938, extension 48, if you have any questions or require further assistance regarding federally listed threatened or endangered species:

Sincerely,



John C. Staples
Assistant Supervisor

LISTED SPECIES - MAMMALS

Indiana bat (*Myotis sodalis*)

The Indiana bat was first protected on March 11, 1967 under the Endangered Species Preservation Act of 1966 and is currently listed as endangered pursuant to the ESA. Indiana bats hibernate in caves and abandoned mine shafts from October to April, depending on climatic conditions. Between early August and mid-September, Indiana bats arrive near their hibernation caves and engage in swarming and mating activity. Swarming at cave entrances continues into mid or late October. During this time, the bats forage and build fat reserves for hibernation. Many areas of New Jersey have not been surveyed for the presence of the Indiana bat. The past extensive mining that has taken place in some areas of New Jersey has resulted in numerous abandoned mine shafts that may provide suitable conditions for use by the Indiana bat as hibernacula. However, the openings of many of these shafts have collapsed or been purposefully sealed to prevent human access, making determination of Indiana bat use difficult.

After emerging from hibernation, Indiana bats once again forage in the vicinity of the hibernation site before migrating to summer habitats. Where Indiana bats go after dispersing from their hibernacula in New Jersey is not well known. Until recently, little was known about the summer habitat of the Indiana bat. Female Indiana bats occupy summer maternity roosts under the loose tree bark of dead, dying, or live trees along riparian, floodplain, or upland forests. Female Indiana bats raise a single offspring each year. The summer roosts of adult males are often found near maternity roosts, but where most males spend the day is unknown. Some adult males remain near the hibernaculum and have been found in caves during the summer. Proposed projects in the following counties should be reviewed to determine if suitable summer or winter habitat is present: Essex, Hunterdon, Passaic, Somerset, Sussex, Union, and Warren. If suitable habitat is present and will be altered or removed, the project site should be surveyed for the presence of the Indiana bat.

Indiana bats, as with all eastern United States bat species, feed almost exclusively on insects. Indiana bats forage for flying insects in and around the tree canopy at night. A variety of upland and wetland habitats are used as foraging areas, including flood plain, riparian, and upland forests; pastures; clearings with early successional vegetation; cropland borders; and wooded fencerows. Preferred foraging areas are streams, associated flood plain forests, and impounded bodies of water such as ponds and reservoirs. The abundance of mature trees within the floodplain and upland forest in northern New Jersey provide suitable maternity, summer, and foraging habitat for the Indiana bat. If maternity roost sites are located within a project area, clearing of mature trees could adversely affect the Indiana bat through disturbance to or destruction of maternity or summer roost trees. Threats to the Indiana bat include disturbance or killing of hibernating and maternity colonies; vandalism and improper gating of hibernacula; fragmentation, degradation, and destruction of forested summer habitats; and use of pesticides and other environmental contaminants.

Enclosure – Characteristics of Indiana Bat Summer Habitat

Potential summer habitat for Indiana bats features at least 24 suitable roost trees per acre. Tree characteristics such as loose or shaggy bark, crevices, and hollows are more important than tree species. Suitable roost trees include any of the following:

- live shagbark hickories (*Carya ovata*) over 9 inches in diameter at breast height (dbh);
- lightning-struck trees over 9 inches dbh;
- dead, dying, or damaged trees of any species over 9 inches dbh with at least 10 percent exfoliating bark;
- den trees, broken trees, or stumps over 9 inches dbh and over 9 feet in height; and
- live trees of any species over 26 inches dbh.

Trees as small as 5 inches dbh have been used as maternity roosts and trees as small as 3 inches dbh have been used by roosting males; therefore, smaller dbh trees with the aforementioned characteristics should be retained if larger dbh trees are not present.

The following are examples of native tree species that should be included in planting plans designed to provide suitable roosts for Indiana bats in New Jersey.

Red maple	<i>Acer rubrum</i>
Silver maple*	<i>Acer saccharinum</i>
Sugar maple *	<i>Acer saccharum</i>
Yellow birch	<i>Betula alleghaniensis</i>
Gray birch	<i>Betula populifolia</i>
Bitternut hickory	<i>Carya cordiformis</i>
Sweet pignut hickory	<i>Carya ovalis</i>
Shagbark hickory *	<i>Carya ovata</i>
White ash	<i>Fraxinus americana</i>
Green ash*	<i>Fraxinus pennsylvanica</i>
White pine	<i>Pinus strobus</i>
Eastern cottonwood*	<i>Populus deltoides</i>
White oak*	<i>Quercus alba</i>
Pin oak	<i>Quercus palustris</i>
Northern red oak	<i>Quercus rubra</i>
Post oak	<i>Quercus stellata</i>
American elm*	<i>Ulmus americana</i>
Slippery elm	<i>Ulmus rubra</i>

* preferred roost tree species

Revised 2/6/2008

RECOGNIZED QUALIFIED INDIANA BAT SURVEYORS

The following list includes individuals recognized by the U.S. Fish and Wildlife Service, New Jersey Field Office, and the New Jersey Department of Environmental Protection (NJDEP), Endangered and Nongame Species Program as qualified to conduct surveys for Indiana bats. This list may not include all individuals qualified to survey for this species. This list will be updated periodically. Inclusion of names on this list does not constitute endorsement by the Service, the NJDEP, or any other U.S. Government agency or State agency.

Various techniques are used to sample and study bats in New Jersey, including hibernacula surveys, mist netting, acoustic detection, and radio-telemetry. Some individuals on this list may not be qualified to conduct all techniques. A scientific collecting permit from the NJDEP is required to capture bats in New Jersey.

Hal Bryan
EcoTech, Inc.
313 Capital Avenue
P.O. Box 8
Frankfurt, Kentucky 40602-0008
Phone: (502) 223-8136

Dr. Virgil Brack
Environmental Solutions & Innovations, LLC
781 Neeb Road
Cincinnati, Ohio 45233
Phone: (513) 451-1777
Fax: (513) 451-3321
e-mail: vbrack@EnvironmentalSI.com

Karen Campbell
Biology Department
Albright University
P.O. Box 15234
Reading, Pennsylvania 19612-5234
Phone: (610) 921-7728
Fax: (610) 921-7530

John Chenger
Bat Conservation & Management, Inc.
220 Old Stone House Road
Carlisle, Pennsylvania 17013
Phone: (717) 241-2228
Fax: (717) 241-2228
e-mail: jchenger@batmanagement.com

Bryon DuBois
Trident Environmental Consultants
1856 Route 9
Toms River, New Jersey 08755
Phone: (732) 818-8699
Fax: (732) 818-3744
email: bdubois@tridentenviro.com

James D. Kiser
Fuller, Mossbarger, Scott & May
1901 Nelson Miller Parkway
Louisville, Kentucky 40223
Phone (502) 212-5000
Fax (502) 212-5055
e-mail: jkiser@fmsm.com

Ryan Leiberher
Skelly and Loy
2601 North Front Street
Harrisburg, Pennsylvania 17110-1185
Phone: (717) 232-0593
Fax: (717) 232-1799
e-mail: rleiberher@skellyloy.com

Robert F. Madej
R.D. Zande & Associates
1237 Dublin Road
Columbus, Ohio 43215
Phone: (800) 340-2743
Fax: (614) 486-4387
E-mail: made2@zande.com

Russ Romme
BHE Environmental, Inc.
11733 Chesterdale Road
Cincinnati, Ohio 45246
Phone: (513) 326-1500
Fax: (513) 326-1550
e-mail: rromme@bheenv.com

Chris Sanders
Sanders Environmental Inc.
322 Borealis Way
Bellefonte, PA 16823
Phone: (814)659-8257
e-mail: Sanders@batgate.com

Revised December 2007

2008-0677



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

January 27, 2010

Sue Sutter
The Louis Berger Group, Inc.
75 2nd Avenue, Suite 700
Needham, MA 02494

USFWS #: 2008-0677

Dear Ms. Sutter:

This responds to your Indiana bat survey report submitted to this office on September 15, 2009, and our meeting on November 18, 2009 regarding the proposed Susquehanna Roseland 500kV Transmission Line located in Luzerne County, Pennsylvania. The proposed project is within the range of the Indiana bat (*Myotis sodalis*), a species that is federally listed as endangered and the bog turtle (*Clemmys muhlenbergii*), a species that is federally listed as threatened. 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.

Indiana bat

Mist-net Surveys:

Our letter of October 16, 2008, requested mist net surveys for the entire project right-of-way due to proposed forest clearing associated with construction of the project. However, this excluded the 25 acres of forest impacts proposed within the 10-mile radius around the Dogtown and Glen Lyon Indiana bat hibernaculum. Since we assume presence within this radius, no mist net surveys were conducted in this area.

According to the report, surveys were conducted at 136 sites within the project area between May 27 and August 12, 2009 in accordance with the Fish and Wildlife Service's (USFWS) Indiana bat mist-net survey guidelines. During these surveys, 665 bats of eight species were captured, but this did not include any Indiana bats. Based on these survey results, we have concluded that Indiana bats are either not present in the project area, or are present in such low densities that they were not detected.

Portal Surveys:

Additionally, there were five portals identified within the project boundaries. Spring hibernacula surveys were performed in accordance with USFWS and Pennsylvania Game Commission guidelines between May 5 and May 9, 2009. During these surveys, 13 bats of two species were captured, but this did not include any Indiana bats.

Direct Impacts:

According to the information provided in your August 20, 2009 email, approximately 25 acres of forest habitat will be removed within the ten miles radius of the Glen Lyon and Dogtown Mines. A portion of the project is located approximately 1.5 miles north of the Glen Lyon Mine and approximately 175 feet west of the Dogtown Mine. The proposed transmission line is 175 feet from the Dogtown Mine but no new disturbance is proposed near this mine because there is an existing line in this portion of the project.

Due to the proximity of this 25 acre area to two known Indiana bat hibernacula, removal of trees and forested areas within this area could result in the direct take of roosting Indiana bats, which could be injured or killed when trees are cut. Studies have found that forested areas located within ten miles of hibernacula provide important foraging and roosting habitat for Indiana bats, especially during the fall and spring, when bats are building up their fat reserves prior to and after hibernation. In addition, female maternity colonies and individual male bats may be found in the vicinity of hibernacula throughout the summer months.

To avoid the direct take of Indiana bats, if any tree-cutting activities are proposed within this 25 acre area, they should be carried out from November 16 to March 31, during which time bats are hibernating. If any tree-cutting is necessary from April 1 to November 15, the following trees greater than or equal to five inches diameter breast height (d.b.h.) should not be cut or physically disturbed (e.g., while harvesting any adjacent trees) in order to avoid killing or injuring roosting Indiana bats: 1) dead or dying trees and snags (including lightning struck trees) with exfoliating bark; 2) live trees (such as shagbark and shellbark hickory) which have exfoliating or defoliating bark in the trunk or branches; and 3) trees or snags that have characteristics typical of roost sites for Indiana bats (i.e., have exfoliating or defoliating bark, or contain cracks, crevices, or holes that could be used by the species as a potential roost), especially trees with sun exposure to the trunk. Tree-clearing from November 16 to March 31 may proceed without these restrictions.

If a seasonal restriction on tree-cutting is implemented in the 25 acre area, to avoid the direct take of Indiana bats, and because mist-net surveys and portal searches did not find any Indiana bats outside of this area, construction of the proposed project is not likely to adversely affect this species. If you are unable to implement the above measures to avoid adverse effects, however, further consultation with this office will be necessary. For future conservation of the species, and for the benefit of all wildlife species in the project area, we encourage you to conserve forest habitat on the site whenever possible.

Bog turtle

On November 18, 2009 a meeting was held at the Delaware Water Gap National Recreation Area (DEWA) to discuss impacts of replacing transmission line towers and restringing the transmission lines. The existing transmission line crosses the Arnott Fen, a large wetland complex occupied by bog turtles. The fen is on DEWA property.

After the meeting, we walked two different routes, each of which can access one of the towers. Each route crosses the wetland, however, the northern route will have direct impacts to the bog turtle and would require formal consultation through Section 7 of the Endangered Species Act.

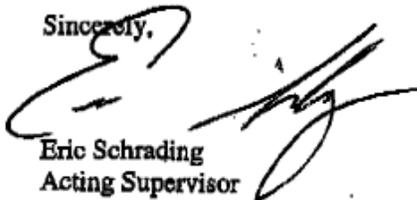
The southern access route crosses a tributary that flows from one wetland to another. The proposed crossing area for the southern access route is located at an incised forested tributary. There are no wetlands within at least 200 feet from this crossing area. However, bog turtles can use this area as a travel corridor. Therefore, in order to avoid direct take of bog turtles, the Service recommends the southern access route be used for construction access and implementation. Additionally, because of the project's proximity to bog turtle habitat, all work associated with the southern access route, access roads and tower replacement should be completed between November 1 and March 31, when bog turtles are hibernating. If the work must be completed outside these dates, a qualified bog turtle surveyor should conduct a pre-construction bog turtle survey immediately prior to all work-related activities, and a silt-fence should be installed between the potential bog turtle habitat and the construction area. If bog turtles are found during the survey, construction work must not be initiated, and the USFWS and Pennsylvania Fish and Boat Commission must be contacted.

If this project is implemented with the above conditions, construction is not likely to adversely affect the bog turtle. This determination is valid for two years from the date of this letter. If the proposed project has not been fully implemented prior to this, an additional review by this office is recommended. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

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 Pam Shellenberger of my staff at 814-234-4090 if you have any questions or require further assistance regarding this matter.

Sincerely,



Eric Schradling
Acting Supervisor

Enclosure

Enclose:
Appendix A

cc:
PGC, Harrisburg – Jim Leigey
Readers file
ES file – active
Response type
P:\PROFFICE\Drafts\Drafts 2010\Susquehanna-Roseland Transmission Line2.doc

Jim Leigey
Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, PA 17110-9797



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

April 17, 2012

Sue Sutter
The Louis Berger Group, Inc.
100 Commercial Street
2nd Floor, North
Manchester, NH 03101

Dear Ms. Sutter:

This responds to your letter of February 10, 2012, which requested an update to our letter of January 27, 2010, regarding the proposed Susquehanna to Roseland 500 kV Electric Transmission Line Project (SRLINE) proposed route located in Luzerne, Lackawanna, Wayne, Pike and Monroe 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, as well as the Migratory Bird Treaty Act (MBTA, 16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755, as amended) and the Bald and Golden Eagle Protection Act (54 Stat. 250, as amended; 16 U.S.C. 668-668d) to ensure the protection of migratory bird species.

Beginning in 2009, The Louis Berger Group, Inc, worked cooperatively with the FWS to evaluate and minimize adverse effects to federally listed species along your company's preferred route for the SRLINE (*i.e.*, "Alternative 2/2b" in the NPS Draft Environmental Impact Statement [DEIS]). Habitat assessments and species surveys were conducted and conservation measures were developed with FWS input. The FWS appreciates your previous cooperation to protect listed species.

Indiana bat

The proposed project is within the range of the Indiana bat (*Myotis sodalis*), a species that is federally listed as endangered.

Mist-net Surveys:

Mist-net surveys were conducted between May 27 and August 12, 2009 in accordance with the Fish and Wildlife Service's (USFWS) Indiana bat mist-net survey guidelines. No Indiana bats were captured. Based on these survey results, we have concluded that Indiana bats are either not present in portions of the project area surveyed, or are present in such low densities that they were not detected. It should be noted that the 25 acres of forest impacts proposed within the 10-

mile radius around the Dogtown and Glen Lyon Indiana bat hibernaculum were not surveyed, since we assume presence within this radius.

Portal Surveys:

Additionally, there were five portals identified within the project boundaries. Spring hibernacula surveys were performed in accordance with USFWS and Pennsylvania Game Commission guidelines between May 5 and May 9, 2009. During these surveys, 13 bats of two species were captured, but this did not include any federally listed bats. Therefore, we assume Indiana bats are not present in these portal areas.

Direct Impacts:

A portion of the project is located approximately 1.5 miles north of the Glen Lyon Mine and approximately 175 feet west of the Dogtown Mine. The proposed transmission line is 175 feet from the Dogtown Mine but no new disturbance is proposed near this mine because the line already exists in this portion of the project. All known direct impacts to this species in Pennsylvania are occurring outside of the Delaware Water Gap National Recreation Area (DEWA).

According to the information provided in your March 19, 2012 email, approximately 13 acres of forest habitat were cleared from February 27, 2012 to March 21, 2012, within the ten mile radius of the Glen Lyon and Dogtown Mines. This was less than the 25 acres that were originally anticipated to be cleared in this area.

As discussed, forests and woodlots in the vicinity of hibernacula provide important foraging and roosting habitat for Indiana bats, and impacts to forest habitat may adversely affect Indiana bats in two primary ways. First, the cutting of trees during the spring, summer or fall may kill or injure Indiana bats, because they roost in trees during these seasons. Second, habitat within the swarming radius of hibernacula is especially important during the fall and spring, immediately prior to and after hibernation, and therefore the loss of this foraging and roosting habitat itself may harm Indiana bats. When bats are forced to shift their normal foraging or roosting to nearby habitat, they may face a reduction in fitness affecting their survival during hibernation, in addition to potentially increasing competition with or displacement of other bats. Access to suitable foraging habitat is particularly important for bats upon their return to hibernacula in late summer and early fall, when they need to build up fat reserves for the anticipated hibernation period. Consequently, bats that lose a significant amount of foraging habitat are likely to experience an increased risk of mortality due to a reduction in fitness, as well as a reduction in reproductive potential.

If measures can be implemented to reduce the likelihood of take and the Service can conclude project effects to be insignificant or discountable, then no take permit (through Section 7) would be necessary. As one means to implement measures to minimize potential adverse effects on Indiana bat, you may choose to prepare an *Indiana Bat Conservation Plan*, in accordance with the enclosed guidance. If so, please submit the draft plan to our office for review and approval. These areas would be the areas within the swarming habitat of the hibernaculum, and any areas determined to be occupied based on results of cave/mine surveys.

We are aware that we previously commented on impacts to the Indiana bat and requested a time of year restriction for tree clearing to minimize project effects and that this tree clearing has already occurred, consistent with our recommendations. However, due to an increase in the number of projects that have forest disturbance in these radii and the accumulated impacts associated with these disturbances, and the ongoing status of the project, we are now recommending that forest loss be addressed (see attached Indiana Bat Conservation Plan guidance) in order for the project to maintain a status of not likely to adversely affect Indiana bats.

Please advise our office whether you intend to avoid take due to impacts from forest clearing in these areas through an Indiana Bat Conservation Plan, or whether the project will undergo Section 7 consultation due to a federal nexus.

Bog turtle

The proposed project is within the range of the bog turtle (*Clemmys muhlenbergii*), a species that is federally listed as threatened. Of all the counties associated with this project, Monroe County is the only county within the known range of this species.

On November 18, 2009 a meeting was held at the DEWA to discuss access impacts of replacing transmission line towers and restringing the transmission lines. The existing transmission line crosses the Arnott Fen, a large wetland complex occupied by bog turtles. The fen is on DEWA property. After the meeting, we walked two different routes (the northern access route and the southern access route), each of which can access one of the towers. Each route crosses the wetland, however, the northern route will have direct impacts to the bog turtle and its habitat and would require formal consultation through Section 7 of the Endangered Species Act.

According to your letter of February 10, 2012, and during your phone conversation on March 19, 2012, with our office, you indicated that only the southern access route will be used to access tower construction and placement near the Arnott Fen. During the November 2009 field meeting, DEWA viewed the southern access route, the crossing area over the tributary and potential access areas through the forest.

Following the southern access route would require crossing over a forested incised tributary which flows from one wetland to another. Although bog turtles can use this forested tributary as a travel corridor, direct impacts can be avoided by implementing all work associated with the southern access route, access roads and tower replacement between November 1 and March 31, when bog turtles are assumed to be hibernating. If this time-of-year restriction cannot be implemented, we further recommend you conduct a bog turtle survey in accordance with the following conditions, which only apply if project construction is proposed to occur between April 1 and October 31, during which time bog turtles are active:

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.

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 should be contacted immediately, and construction should not proceed until further consultation occurs. Survey results should be submitted to the Service and PFBC.

Additionally, all work activities including: staging areas, tower placement, tree cutting, access roads, etc., should occur at least 300' from the occupied wetland. If project activities are proposed closer than this, but not directly in the wetland, they should occur between November 1 and March 31, when bog turtles are assumed to be hibernating, and follow the same measures listed above.

Finally, to reduce impacts to the species and its habitat, no trees should be felled into the wetland.

If this project is implemented using the southern access route with the above conditions, construction is not likely to adversely affect the bog turtle. We note that using this access route will minimize impacts to a federally threatened species and therefore we are commenting on it consistent with our authority under the Endangered Species Act, but also that the route may require separate evaluation by the DEWA for impacts associated with National Park lands.

This determination is valid for two years from the date of this letter. If the proposed project has not been fully implemented prior to this, an additional review by this office is recommended. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

Assessment of Risks to Migratory Birds including Bald and Golden Eagles

The Fish and Wildlife Service (Service) is the principal Federal agency charged with protecting and enhancing populations and habitat of migratory bird species. The Migratory Bird Treaty Act (MBTA) 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 enforcement action on those individuals, companies, or agencies that take migratory birds with disregard for their

actions and the law. We recognize that this information was not provided to you in our previous correspondence and we apologize for that discrepancy.

In addition to the MBTA, bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (Eagle Act), which prohibits killing; selling; or otherwise harming eagles, their nests, or their eggs. The Eagle Act also includes provisions not included in the MBTA, including the protection of unoccupied nests and a definition of take that prohibits disturbing eagles. There are 43 known eagle nest locations within Lackawanna, Luzerne, Pike and Wayne Counties. While some of these nests may be alternate nests for the same breeding pair, the majority of all nests are located in Pike County. Based on the project area map, it appears that this transmission line will be within two miles of five nests within Pike County, one nest in Lackawanna County and three nests in Luzerne County. Since the transmission line is located near several large waterbodies (*e.g.*, Lake Wallenpaupack, Peck's pond) and since it is in close proximity to both the Susquehanna and the Delaware Rivers, there is potential for new nests to be constructed in the current breeding season and potential for disturbance to occur to nesting and foraging bald eagles. The Service recommends that applicants carefully evaluate their proposed project in light of the *National Bald Eagle Management Guidelines*, which are available at <http://www.fws.gov/migratorybirds/BaldEagle.htm>. Recommendations will be forthcoming from the FWS Regional Office on the applicability of a permit for take of bald eagles on National Park Service (NPS) lands, however, it is important to note that before a permit can be considered, all reasonable avoidance and conservation measures must be undertaken. We suggest discussing whether or not eagles might be disturbed, injured or killed as a direct or indirect result of the proposed project in the rest of the project area, as well as on NPS lands, with the Regional Office to determine applicability of take permits.

In addition to disturbance, the potential exists for avian mortality from electrocutions or collisions with power lines as well as direct impacts from habitat loss for wintering, migrating, and breeding migratory birds and indirect impacts from fragmentation and site avoidance within the project boundaries. Electrocutions from power lines are of particular concern to raptors, as their size, hunting strategy, and nesting preferences make them particularly vulnerable. Other species, such as corvids (crows and ravens) and cormorants also show an affinity for nesting on power lines. Collisions are most common at night, or under low visibility conditions, because migratory birds and land birds either cannot see the utility lines, or they lack the ability to negotiate obstacles quickly enough to avoid them. 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.

The Avian Power Line Interaction Committee (APLIC; www.aplic.org) and the Service (<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/BirdHazards.html>) have developed guidelines for power lines to minimize impacts from existing facilities and in the construction of new utility and energy systems and associated infrastructure (APLIC 1994, 1996, and 2006; APLIC and Service 2005). In addition to those recommendations and suggestions, we offer the following recommendations to avoid and minimize impacts to migratory birds within and around the project area.

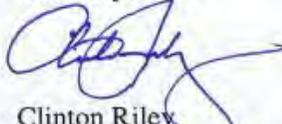
1. Develop an Avian Protection Plan that minimizes the risk of electrocution, collision, and nest disturbance for migratory birds (APLIC and Service 2005).
2. Minimize the risk of bird electrocutions by using horizontal and vertical separation between energized and/or grounded parts that allows sufficient clearance for wrist-to-wrist (flesh-to-flesh) and head-to-foot (flesh-to-flesh) clearance for the largest migratory birds in the project area (the standard is 60 inches of horizontal separation and 40-48 inches of vertical separation for eagles) and apply insulating conductors on corner and transformer poles. Apply covers on phases or grounds where adequate separation is not feasible (*e.g.*, insulator/conductor covers, bushing covers, arrester covers, cutout covers, jumper wire covers).
3. Minimize the risk of collisions by marking the wires to increase visibility to flying birds (*e.g.*, hanging markers, bird flight diverters, aviation marker balls).
4. Report bird mortalities and injuries resulting from electrocutions or collisions on the Service's Bird Fatality/Injury Reporting Program (Bird Report program). The Bird Report program was designed, with significant industry input and feedback, to provide a user-friendly, easily-accessed, method of allowing members of the electric utility industry to voluntarily report bird mortalities and injuries resulting from electrocutions or collisions with electrical utility equipment. Collecting information about the locations and circumstances under which birds are killed or injured on power equipment serves the primary purpose of determining how to prevent future bird interactions. The database is intended for use by utilities to see which structures and equipment are hazardous to birds, and under what conditions and assists in evaluating and enhancing the effectiveness of retrofitting.
5. Minimize land and vegetation disturbance and reduce habitat fragmentation during project design and construction, especially if habitat cannot be fully restored after construction. Where practicable, concentrate construction activities, infrastructure, and man-made structures (*e.g.*, poles, roads) on lands already altered or cultivated, and away from areas of intact and healthy native habitats. Co-locate roads, staging areas, and other infrastructure in or immediately adjacent to already-disturbed areas (*e.g.*, existing rights-of-way, agricultural fields). If co-location is not feasible, select fragmented or degraded habitats rather than relatively intact areas.
6. Where disturbance is necessary, clear natural or semi-natural habitats (*e.g.*, forests, woodlots, reverting fields, shrubby areas) and perform maintenance activities (*e.g.*, mowing) 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, fledglings).
7. Avoid permanent habitat alterations in areas where birds are highly concentrated or where sizable prey bases exist. Avoid establishing sizable structures along known bird migration pathways or known daily movement flyways (*e.g.*, between roosting and feeding areas).

Examples of high concentration areas for birds are wetlands, State or Federal refuges, Audubon Important Bird Areas, private duck clubs, rookeries, roosts, and riparian areas.

8. 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.

If you have any questions regarding this matter, please contact Pamela Shellenberger of my staff at 814-234-4090.

Sincerely, ¹



Clinton Riley
Field Office Supervisor

References

Avian Power Line Interaction Committee (APLIC). 1994. Mitigating bird collisions with power lines: the state of the art in 1994. Edison Electric Institute, Washington, D.C.

_____. 1996 (reprinted 2000). Suggested practices for raptor protection on power lines: the state of the art in 1996. Edison Electric Institute/Raptor Research Foundation. Washington, D.C.

_____. 2006. Suggested practices for avian protection on power lines: the state of the art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.

USFWS. 2005. Avian Protection Plan (APP) Guidelines. The Edison Electric Institute, APLIC and U.S. Fish and Wildlife Service. Available online at:
<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/APP/AVIAN%20PROTECTION%20PLAN%20FINAL%204%2019%2005.pdf>

Enclose:
Qualified BT surveyor list
Indiana Bat Conservation Plan Guidance

cc:
Patrick McMackin
PPL Electric Utilities
Two North Ninth Street
GENN5
Allentown, PA 18101-1179

NJFO Wendy Walsh	Wendy_Walsh@fws.gov
RO Paul Phifer	Paul_Phifer@fws.gov
RO Glenn Smith	Glenn_S_Smith@fws.gov
NPS John Donahue	John_J_Donahue@nps.gov
NPS Amanda Stein	amanda_stein@nps.gov
NPS Morgan Elmer	morgan_elmer@nps.gov
PFBC Robert Morgan	robemorgan@pa.gov
PGC Nathan Havens	nhavens@pa.gov

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United States Department of the Interior

FISH AND WILDLIFE SERVICE



In Reply Refer To:

2008-I-0319

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
<http://www.fws.gov/northeast/njfieldoffice/>

Thomas Micai, Director
Division of Land Use Regulation
New Jersey Department of Environmental Protection
P.O. Box 439
Trenton, New Jersey 08625-0439
Attention: Lou Cattuna

JUN 11 2010

Re: PSE&G Roseland to Susquehanna Electric Transmission Line
NJDEP File Number 0000-08-0010.1

Dear Mr. Micai:

The U.S. Fish and Wildlife Service (Service) has reviewed additional information provided by PSE&G (applicant) on June 8 and 9, 2010 in response to our May 21 and 24, 2010 (e-mail) and June 8, 2010 (facsimile) requests. This additional information was requested by the Service in regard to PSE&G's application to the New Jersey Department of Environmental Protection (NJDEP) for a New Jersey Freshwater Wetlands Protection Act (N.J.S.A. 13:9B *et seq.*) individual permit and other State authorizations (File Number 0000-08-0010.1) to construct the eastern portion of the Roseland to Susquehanna Electric Transmission Line.

The proposed project involves installation of approximately 25 miles of new 500-kV overhead electric transmission lines along an existing 150-foot-wide right-of-way (ROW) from Hopatcong Borough, Sussex County to Roseland Borough, Essex County, New Jersey. The project also involves construction of a new switching station in Hopatcong and an expanded switching station in Roseland.

PSE&G intends to construct a western portion of the project, roughly 20 miles from Hopatcong to the Delaware River, sometime after the spring of 2012. The subject application does not cover the western portion. Additional project segments are proposed in Pennsylvania by PPL Electric.

AUTHORITY

This response is pursuant to the December 22, 1993 Memorandum of Agreement (MOA) among the U.S. Environmental Protection Agency, the NJDEP, and the Service; the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) (ESA); the Bald and Golden Eagle Protection Act (54 Stat. 250; 16 U.S.C. 668-668d); and the Migratory Bird Treaty Act (40 Stat. 755; 16 U.S.C. 703-712).

FEDERALLY LISTED SPECIES

Indiana Bat

Pursuant to the 1993 MOA, the subject permit has the potential to affect the federally listed (endangered) Indiana bat (*Myotis sodalis*) unless the following permit conditions are implemented.

- All conservation measures recommended by the Service and adopted by PSE&G, as reflected in the enclosed excerpt of PSE&G's revised *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project*.
- Service concurrence with final compensatory mitigation plans for forest impacts including: (1) preservation, enhancement, and/or restoration of Indiana bat habitat as one component of the 100 to 200-acre Highlands Forest restoration/education pilot site at the Hopatcong Switching Station;¹ and (2) preservation, enhancement, and/or restoration of Indiana bat habitat at a site along the Passaic River. Information regarding Indiana bat habitat requirements is enclosed.

The Service has reviewed the January 29, 2010 Summer Mist Net Survey Report prepared by ESI, Inc., and concurs that no seasonal restriction on tree clearing is necessary at the Hopatcong Switching Station or Fredon Relocation area if work is completed within the next 2 calendar years. The Service has reviewed the June 8, 2010 habitat assessment for the Roseland Switching Station prepared by EcolSciences, Inc., and concurs that no mist net survey is needed for this approximately 2-acre forest.

Via electronic mail dated June 9, 2010, PSE&G agreed to implement Service-recommended conservation measures for the Indiana bat (enclosed), and provided the following estimates of total tree clearing, including rights-of-way, access roads, and temporary work spaces.

	Eastern Portion	Western Portion	Total
Wetland	0.52 acres	0.25 acres	0.77 acres
Transition Area (assumed 150')	6.90 acres	3.04 acres	9.94 acres
Upland	13.60 acres	7.30 acres	20.90 acres
Total	21.02 acres	10.59 acres	31.61 acres

With implementation of the above permit conditions, the Service concurs that, even considering cumulative impacts (*i.e.*, from the western portion), the loss of approximately 21.02 acres of potential Indiana bat summer roosting and foraging habitat from construction of the eastern portion of the project is insignificant based on the following.

- The impacts are spread across a 25-mile linear project.

¹ The Hopatcong forest restoration project is a component of PSE&G's Comprehensive Mitigation Plan, which was part of the basis for NJDEP's January 15, 2010 Highlands Regional Master Plan Consistency Determination.

- The areas with the greatest impacts have been evaluated for Indiana bat habitat (Roseland Switching Station, Picatinny Arsenal) or surveyed using the Service's mist netting guidelines (Hopatcong Switching Station, Fredon Relocation Site).
- In those areas identified by the Service as hibernacula and/or maternity colony foraging habitat, PSE&G will not install any permanent structure (e.g., access road, tower) within 300 feet of wetlands or open waters and will not clear trees or locate temporary work spaces within 150 feet of wetlands or open waters.
- PSE&G will provide compensatory mitigation for forest impacts, as described above.

To minimize cumulative impacts to Indiana bat habitat, additional information, surveys, and/or conservation measures may be necessary for the western portion of the Roseland to Susquehanna Electric Transmission Line project.

With implementation of the above permit conditions, the Service concurs that the risk of disturbance or injury to roosting bats from construction of the eastern portion of the project is discountable based on the seasonal restrictions included in PSE&G's revised *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project*. Except for the Hopatcong Switching Station and Fredon Relocation area, all portions of the project (including access roads, temporary work spaces, Picatinny Arsenal, and the Roseland Switching Station) will be constructed with seasonal restrictions on tree clearing as specified in the revised *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project*.

Bog Turtle

Pursuant to the 1993 MOA, the subject permit has the potential to affect the federally listed (threatened) bog turtle (*Clemmys muhlenbergii*) unless the following permit condition is implemented.

- All conservation measures recommended by the Service and adopted by PSE&G, as reflected in the enclosed excerpt of PSE&G's revised *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project*.

The Service concurs, or has previously concurred, with the following survey reports prepared by EcolSciences, Inc.

- July 8, 2008 (Phase 1 right-of-way)
- December 23, 2008 (Phase 1 Delaware Water Gap National Recreation Area)
- June 18, 2009 (Phase 2 for 5 wetlands)
- July 29, 2009 (Phase 1 Hopatcong Switching Station)
- March 23, 2010 (Phase 1 access roads; concurrence for eastern portion only)
- June 8, 2010 (Phase 1 for 11 additional spans)

With implementation of the above permit condition, the Service expects that impacts to the bog turtle from construction of the eastern portion of the project will be insignificant and

discountable. This determination is based on the extensive surveys (listed above) and on the habitat buffers, fencing, and monitoring protocols detailed in PSE&G's revised *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project*.

Please note that additional bog turtle surveys and information are still needed for the western portion of the project. Based on this information, the Service may recommend additional conservation measures for the western portion.

MIGRATORY BIRDS

The Migratory Bird Treaty Act prohibits the take of migratory birds, their parts, nests, and eggs, even when incidental to an otherwise lawful activity. In response to the Service's recommendation, PSE&G has prepared a draft Avian Protection Plan (APP) dated June 2010. Pursuant to the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, we recommend that NJDEP include a condition in the subject permit to incorporate Service comments on the draft APP, and to fully implement the final APP.

The Service offers the following preliminary comments on the draft APP.

- The draft APP includes all components recommended in the 2005 *Avian Protection Plan (APP) Guidelines*, and provides a thorough overview of avian issues associated with the project.
- Under "Construction Timing (page 18)," PSE&G proposes to initiate activity in the right-of-way prior to the bird breeding season to discourage nesting and thereby minimize bird mortality and nest failure from vegetation clearing. This section should also mention that the seasonal restriction on tree clearing for Indiana bats (April 1 to September 30 or April 1 to November 15, as specified in PSE&G's revised *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project*) applies to most work areas and will be effective in avoiding take of nests in trees. Note that the Migratory Bird Treaty Act prohibits all take of nests with eggs or young, and that Service permits are required to relocate such nests (see enclosed fact sheet).
- The seasonal restriction on disturbance within 1,000 feet of bald eagle (*Haliaeetus leucocephalus*) nests during the nesting season (December 15 to August 31) (page 18) is consistent with the National Bald Eagle Management Guidelines.
- The Service requests an opportunity to review the "Project-specific Transmission Right-of-Way Vegetation Management Plan" (page 21), and recommends that the plan reflect all adopted conservation measures for federally listed species as described in PSE&G's October 23, 2009 letter to the Service.

- Change “May” to “April” in the first bullet on page 21 of the APP, in reference to the bird breeding season and time to avoid activities such as mowing and cutting. Also add a reference to PSE&G’s intention to perform the majority of its transmission vegetation maintenance activities between October 1 through March 31, as indicated in its October 23, 2009 letter.
- The Service appreciates PSE&G’s adoption of our guidelines for aviation safety lighting, and supports the choice of the new Obstacle Collision Avoidance System technology to minimize migratory bird collision hazards caused by light entrapment.
- Bald eagle populations in New Jersey are expanding, and the proposed lines will be in place for many decades. The Service recommends that PSE&G implement the “eagle-safe” electrocution standards (first bullet on page 23) in areas of highly suitable (but as yet unoccupied) eagle habitat, not just current nests and foraging habitats.
- The “raptor-safe” electrocution standards (second bullet on page 23) should be adopted as a minimum standard for the entire line, not just the specified spans, as these species may occur across the entire project area. (Of course, the higher standards for eagles and tall birds would apply in the areas specified.)
- The final APP should specify where flight diverters (transmission line marker) will actually be used (fourth bullet on page 23).
- The final APP should specify which avian enhancement opportunities will actually be constructed within project lands, and should add a section describing enhancement efforts outside of project lands (page 28).

CONCLUSION

Pursuant to the 1993 MOA, the subject permit has the potential to affect the federally listed Indiana bat and bog turtle unless the above-listed conditions are included in the permit. The Service also recommends a permit condition to require PSE&G’s full implementation of the final APP.

The Service appreciates the cooperation of PSE&G and NJDEP in evaluating and minimizing adverse effects to federally listed species and migratory birds. Please contact Wendy Walsh at (609) 383-3938, extension 48, if you have any questions or require further assistance regarding federally listed threatened or endangered species.

Sincerely,



Acting Supervisor

cc via email:

DLUR, Tina Wolff, John Heilferty, Diane Dow, Larry Torok
PAFO, Clint Riley, Pam Shellenberger
PSE&G, Rob Pollock, David Grossmueller



United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352

<http://www.fws.gov/northeast/njfieldoffice/>



In Reply Refer To:
2008-I-0319

OCT 21 2010

Amanda J. Stein, Biologist/Project Manager
Delaware Water Gap National Recreation Area
1 River Road
Bushkill, Pennsylvania 18324-9999

Dear Ms. Stein:

The U.S. Fish and Wildlife Service (Service) has reviewed the preliminary alternative routes identified by the National Park Service (NPS) in your July 2010 newsletter for the proposed Susquehanna to Roseland Transmission Line project to be located in Morris, Sussex, and Warren Counties, New Jersey. The NPS identified these alternative routes for analysis in an Environmental Impact Statement you are preparing to evaluate impacts from the proposed project to three park units: the Appalachian National Scenic Trail, the Delaware Water Gap National Recreation Area (DWGNRA), and the Middle Delaware National Scenic and Recreational River. The project proponent in New Jersey, PSE&G, proposes to upgrade an existing overhead electric transmission line from 230 kV to 500 kV between the existing Roseland Switching Station and the Delaware River. The project may also involve construction of a new switching station and expansion of the Roseland Switching Station. Additional project segments are proposed in Pennsylvania by PPL Electric. Separate comments may be provided by the Service's Pennsylvania Field Office regarding portions of the project located in Pennsylvania.

AUTHORITY

This response is pursuant to Section 7 the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) (ESA); the Bald and Golden Eagle Protection Act (54 Stat. 250; 16 U.S.C. 668-668d) (Eagle Act); and the National Environmental Policy Act of 1969 as amended (83 Stat. 852; 42 U.S.C. 4321 *et seq.*). These comments do not preclude separate review and comments by the Service pursuant to the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*), if any permits are required from the U.S. Army Corps of Engineers pursuant to the Clean Water Act of 1977 (33 U.S.C. 1344 *et seq.*); or the December 22, 1993 Memorandum of Agreement among the U.S. Environmental Protection Agency, New Jersey Department of Environmental Protection (NJDEP), and the Service, if project implementation requires a permit from the NJDEP pursuant to the New Jersey Freshwater Wetlands Protection Act (N.J.S.A. 13:9B *et seq.*).

FEDERALLY LISTED SPECIES

Indiana Bat

Alternative 2

The Service has been working with PSE&G since 2008 to evaluate impacts to the federally listed (endangered) Indiana bat (*Myotis sodalis*) from Alternative 2. Via our June 11, 2010 letter to the NJDEP (enclosed), the Service concurred that the eastern segment of Alternative 2 (from the proposed Hopatcong Switching Station to the Roseland Switching Station) is not likely to adversely affect the Indiana bat, based on PSE&G's adoption of several conservation measures. The Service recommends continued refinement and eventual implementation of these and/or other appropriate project-wide conservation measures, regardless of which alternative is selected. We will review and comment on the revised conservation measures (as detailed in PSE&G's *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project*) after PSE&G and NPS have selected a preferred alternative route through New Jersey.

Among the previously adopted conservation measures for Alternative 2 are buffers on wetlands and open waters within those right-of-way spans identified by the Service as foraging habitat associated with known Indiana bat hibernacula and/or maternity colonies. In such spans, PSE&G will not install any permanent structure (e.g., access road, tower) within 300 feet of wetlands or open waters, and will not clear trees or locate temporary work spaces within 150 feet of wetlands or open waters. If these or any other project-wide conservation measure cannot be implemented for any particular span, PSE&G has agreed to work with the Service to develop alternative site-specific conservation measures sufficient to avoid adverse effects to the Indiana bat. If Alternative 2 is selected, the Service will request an analysis of which spans west of the proposed Hopatcong Switching Station may require alternative site-specific conservation measures. This analysis was already completed for the spans between the Hopatcong and Roseland Stations.

The Service also requests a copy of any survey results that were not previously submitted for the Indiana bat or its habitat in New Jersey (e.g., any Indiana bat surveys conducted within the New Jersey portion of DWGNRA).

Alternatives 3 Through 7

The New Jersey portions of Alternatives 3 through 7 are all located within the geographic range of the Indiana bat. The eastern portions of Alternatives 5 and 6/7 also cross known migratory corridors, swarming habitat associated with known hibernacula, and foraging habitat associated with known maternity colonies. Tree clearing could disturb or injure any roosting bats, and could destroy or degrade roosting sites. To minimize impacts, the Service generally recommends a seasonal restriction on tree clearing from April 1 to November 15 within 10 miles of known hibernacula, and from April 1 to September 30 in other parts of the species' range in New Jersey.

To evaluate potential impacts to Indiana bat habitat, the Service requests information regarding the estimated number of acres of tree clearing associated with the New Jersey portion of each Alternative 3 through 7, including for access roads and temporary work spaces. For Alternative 5, please provide a separate subtotal for the portion of the alignment east of Route 206 (where it intersects Route 80 in Mount Olive Township). For Alternative 6/7, please provide a separate subtotal for the portion of the alignment east of Mount Olive Township. Based on the estimated acres of tree clearing, the Service may request habitat characterizations and/or mist net surveys to determine if further conservation measures are necessary in certain areas.

Bog Turtle

Alternative 2

The Service has been working with PSE&G since 2008 to evaluate impacts to the federally listed (threatened) bog turtle (*Clemmys muhlenbergii*) from Alternative 2. Via our June 11, 2010 letter to the NJDEP (enclosed), the Service concurred that the eastern segment of Alternative 2 (Hopatcong Station to Roseland Station) is not likely to adversely affect the bog turtle, based on PSE&G's adoption of several conservation measures. The Service recommends continued refinement and eventual implementation of these and/or other appropriate project-wide conservation measures, regardless of which alternative is selected. We will review and comment on the revised conservation measures (as detailed in PSE&G's *Construction and Restoration Standards for the Susquehanna-Roseland Transmission Project*) after PSE&G and NPS have selected a preferred alternative route through New Jersey.

Among the previously adopted conservation measures for Alternative 2 are buffers on bog turtle habitat, which includes all wetland areas confirmed as bog turtle habitat through field surveys and/or the NJDEP's Landscape Project mapping, or that are treated as such in the absence of a Phase II survey. PSE&G has agreed that no permanent structures (including but not limited to tower footings and new or improved access roads) will be located within 300 feet of bog turtle habitat. Also, no temporary disturbances (including but not limited to removal of existing towers or other structures, use of motorized equipment, earth disturbance, and equipment/materials storage areas) will take place within 150 feet of bog turtle habitat. If these or any other project-wide conservation measure cannot be implemented for any particular span, PSE&G has agreed to work with the Service to develop alternative site-specific conservation measures sufficient to avoid adverse effects to the bog turtle. If Alternative 2 is selected, the Service will request an analysis of which spans west of the proposed Hoptacong Switching Station may require alternative site-specific conservation measures. This analysis was already completed for the spans between the Hopatcong and Roseland Stations.

The Service also requests a copy of any survey results that were not previously submitted for the bog turtle or its habitat in New Jersey (e.g., Phase II surveys within the New Jersey portion of DWGNRA; surveys requested via the Service's May 21, 2010 electronic mail to PSE&G and NJDEP for specific areas between DWGNRA and the Hopatcong Switching Station).

Alternatives 3 Through 7

The New Jersey portions of Alternatives 3 through 7 are all located within the geographic range of the bog turtle. Alternative 5 includes areas of habitat associated with 4 known bog turtle occurrences. Alternative 6/7 includes areas of habitat associated with 3 known bog turtle occurrences. The locations of known, occupied bog turtle habitat along these alternative routes can be obtained from the NJDEP Landscape Project mapping. Further consultation with the Service will be necessary to evaluate and minimize impacts in areas of known, occupied bog turtle habitat if Alternative 5 or 6/7 is selected.

Alternatives 3 through 7 each include areas of scrub/shrub and emergent wetlands that may provide suitable habitat for the bog turtle. Many areas of New Jersey have not been thoroughly surveyed for endangered and threatened species. If present, bog turtles could be injured or disturbed during construction, and could be adversely affected by any temporary or permanent impacts to wetlands. Therefore, the Service requests that a recognized, qualified surveyor (see enclosed list) evaluate all previously unsurveyed wetlands within and adjacent to each Alternative 3 through 7 for the presence or absence of bog turtle habitat (see enclosed guidance). The survey area should include wetlands in and adjacent to proposed access roads and temporary work spaces as well as the proposed right-of-way. The results of any survey, whether showing presence or absence of bog turtle habitat, must be forwarded to this office for review; please include photographs and the qualifications of the surveyor(s).

Dwarf Wedgemussel

Alternative 4 would cross the Pequest River [redacted] downstream of a known occurrence of the federally listed (endangered) dwarf wedgemussel (*Alasmidonta heterodon*). Alternative 5 would cross the Pequest River [redacted] downstream of a known dwarf wedgemussel occurrence. Alternative 6/7 would cross the Pequest River [redacted] dwarf wedgemussel occurrences located both upstream and downstream of the alignment. The dwarf wedgemussel has also been recorded in the Delaware River [redacted] Alternatives 5 and 6/7.

Text contains sensitive archeological resource information

To evaluate potential impacts to the dwarf wedgemussel, the Service requests information for each alternative regarding any proposed in-stream or riparian work along the Delaware River and within the Pequest River watershed. The Service may recommend surveys and/or conservation measures for the dwarf wedgemussel if any permanent or temporary disturbances are proposed within, or within 300 feet of, these open waters.

Swamp Pink

The headwaters of tributaries to the Lamington and Raritan Rivers historically supported several occurrences of the federally listed (threatened) swamp pink (*Nelumbia bullata*), and one known population still persists in this watershed. Many areas of New Jersey have not been thoroughly surveyed for endangered and threatened species. If present, swamp pink could be adversely affected by any temporary or permanent impacts to its forested wetland habitat. Therefore, the Service requests that a qualified surveyor conduct a survey to determine the presence or absence

of swamp pink (see enclosed guidance). The survey area should include all forested wetlands within [redacted] along Alternative 6/7, including access roads and temporary work areas as well as the right-of-way. The results of any survey, whether showing presence or absence of swamp pink, must be forwarded to this office for review; please include photographs and the qualifications of the surveyor(s).

Text contains sensitive archeological resource information

BALD EAGLE

Several active nests of the bald eagle (*Haliaeetus leucocephalus*) are located along the eastern terminus of Alternative 2. An active bald eagle nest is also located [redacted] of Alternative 3. Important bald wintering areas occur along the Delaware River in the vicinity of Alternatives 2 and 3, and additional wintering habitat is mapped by the NJDEP Landscape Project near the eastern ends of Alternatives 2 and 3. All of the alternatives cross foraging habitat mapped by the NJDEP Landscape Project.

The bald eagle was removed from the Federal List of Endangered and Threatened Wildlife on August 8, 2007. The bald eagle continues to be protected under the Eagle Act and the Migratory Bird Treaty Act (40 Stat. 755; 16 U.S.C. 703-712). The bald eagle also remains a State-listed species under the New Jersey Endangered and Nongame Species Conservation Act (N.J.S.A. 23:2A *et seq.*), which carries protections under the State land use regulation program. These Federal and State laws prohibit take of bald eagles. For the continued protection of bald eagles, and to ensure compliance with Federal and State laws, the Service recommends managing bald eagles in accordance with the National Bald Eagle Management Guidelines and all applicable State regulations. Links to the Guidelines and additional information about the delisting of the bald eagle are available on the New Jersey Field Office web site at <http://www.fws.gov/northeast/njfieldoffice/endangered>.

OTHER MIGRATORY BIRDS

The Migratory Bird Treaty Act prohibits the take of migratory birds, their parts, nests, and eggs, even when incidental to an otherwise lawful activity. At the Service's recommendation, PSE&G has prepared an Avian Protection Plan (APP) for Alternative 2. The Service recommends adaptation and implementation of the APP for whichever alternative is selected. The Service provided comments on a draft of the APP in June 2010. We will provide further review and comments on the revised APP after PSE&G and NPS have selected a preferred alternative route through New Jersey. In addition, the Service generally recommends a seasonal restriction on tree clearing from March 15 to July 31 to prevent unauthorized take of nests and unfledged chicks.

CONCLUSION

The proposed project may adversely affect the federally listed Indiana bat, bog turtle, dwarf wedgemussel and/or swamp pink. Therefore, further consultation with the Service is necessary pursuant to Section 7 of the ESA. Through the informal consultation process, the Service will continue to work cooperatively with NPS and PSE&G to avoid adverse effects to federally listed

species. We also appreciate your cooperation in evaluating and minimize impacts to the bald eagle and other migratory birds.

Except for the above-mentioned species, no other federally listed or proposed threatened or endangered flora or fauna are known to occur within the vicinity of the proposed project. If additional information on listed and proposed species becomes available or if project plans change, this determination may be reconsidered.

Please refer to our web site at <http://www.fws.gov/northeast/njfieldoffice/endangered/> for current lists of federally listed and candidate species in New Jersey. The web site also provides a link to the National Bald Eagle Management Guidelines, and contacts for obtaining current information regarding State-listed and other species of concern from the New Jersey Natural Heritage and Endangered and Nongame Species Programs.

Please contact Wendy Walsh at (609) 383-3938, extension 48, if you have any questions or require further assistance.

Sincerely,



J. Eric Davis Jr.
Supervisor

Enclosures

cc via email:

DLUR, Tina Wolff, John Heilferty, Diane Dow, Larry Torok
PAFO, Clint Riley
PSE&G, Rob Pollock, David Grossmueller



United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services

927 North Main Street, Building D
Pleasantville, New Jersey 08232

Tel: 609/646 9310

Fax: 609/646 0352

<http://www.fws.gov/northeast/njfieldoffice/>



In Reply Refer To:

2008-I-0319

JAN 31 2012

Mr. John J. Donahue, Superintendent
Delaware Water Gap National Recreation Area and
Middle Delaware National Scenic and Recreational River
Bushkill, Pennsylvania 18324

Ms. Pamela Underhill, Superintendent
Appalachian Trail Park Office
P.O. Box 50
Harpers Ferry, West Virginia 25425

Dear Mr. Donahue and Ms. Underhill:

As a cooperating agency for the National Park Service's (NPS) Susquehanna to Roseland 500 kV Transmission Line (SRLINE) Environmental Impact Statement (EIS), the U.S. Fish and Wildlife Service (FWS) has reviewed the December 2011 Draft EIS (DEIS). The FWS Pennsylvania and New Jersey Field Offices (PAFO and NJFO, respectively) provide the following comments pursuant to the National Environmental Policy Act of 1969 as amended (83 Stat. 852; 42 U.S.C. 4321 *et seq.*) (NEPA); Section 7 the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) (ESA); the Bald and Golden Eagle Protection Act (54 Stat. 250; 16 U.S.C. 668-668d) (Eagle Act); and the Migratory Bird Treaty Act (40 Stat. 755; 16 U.S.C. 703-712) (MBTA).

The project proponents, PSE&G and PPL Electric (jointly, the applicant), have applied to NPS to construct a portion of the Susquehanna to Roseland 500kV transmission line and reconstruct an existing 230-kV line along their current Right of Way through three NPS units: the Appalachian National Scenic Trail, the Delaware Water Gap National Recreation Area (DWGNRA), and the Middle Delaware National Scenic and Recreational River. FWS is committed to assisting NPS in meeting its EIS schedule and fulfilling its responsibilities under Federal wildlife laws.

ALTERNATIVES

The FWS appreciates the cooperation of NPS in considering impacts to Cherry Valley National Wildlife Refuge (NWR) in its evaluation of alternatives. Alternative 6/7 has been dropped, in part, to avoid impacts to the NWR. FWS staff will continue to assist NPS and the companies to evaluate alternatives and select a feasible alternative with the least impact on fish and wildlife.

FEDERALLY LISTED SPECIES

Bog Turtle (DEIS page 183)

Within NPS Units

Alternatives 2 and 2b: In a letter dated January 27, 2010, PAFO provided comments on impacts to the federally listed (threatened) bog turtle (*Clemmys [Glyptemys] muhlenbergii*). These comments pertained to Alternatives 2 and 2b and were based on information that had been provided to FWS at that time. As discussed in that letter, there is one known bog turtle site on NPS lands that may be affected by Alternatives 2 and 2b, depending on the specific access route chosen in this area. As indicated in that letter, if the southern route option is used for access, impacts can be avoided and minimized by using a time of year restriction or having a recognized, qualified bog turtle surveyor on-site during construction. Therefore, the January 27, 2010 letter recommended that the southern route be used to minimize impacts to this species. On the other hand, if the northern route is used for access, direct impacts to the bog turtle could occur and formal consultation through Section 7 of the ESA would likely be necessary.

The NJFO addressed the bog turtle via letter dated October 21, 2010. The NJFO subsequently reviewed bog turtle survey reports for NPS lands along Alternatives 2 and 2b. Via comments transmitted July 12, 2010, NJFO concurred with the June 17, 2010 Bog Turtle Habitat Assessment for Wetlands NPS 025A, 025B, and 010, and with the September 10, 2010 Phase 2 Bog Turtle Survey Report. No bog turtles were found. However, if Alternative 2 or 2b is selected, FWS will work with NPS and the applicant to determine if any Conservation Measures are necessary in this area based on proximity to a known bog turtle occurrence and the specific project activities proposed in and near suitable habitat.

No further bog turtle surveys are recommended within NPS units along Alternatives 2 or 2b. If additional information about possible impacts of Alternatives 2 and 2b (*e.g.*, blasting) has become available since our previous review, FWS may reconsider our previous recommendations and/or determinations.

Alternatives 3-5: FWS understands that NPS is undertaking Phase 1 bog turtle surveys along Alternatives 3, 4, and 5 within NPS units. All wetlands within 300 feet of these various alignments should be surveyed by a recognized, qualified surveyor following FWS survey guidelines.¹ The Phase 1 survey reports should be evaluated by the agencies before initiating any presence/absence (Phase 2) surveys. Phase 2 surveys need to be conducted between April 15 and June 15, with at least 2 surveys occurring in May.

If properly implemented species surveys are negative, then the project activities along these routes within NPS units would be considered "not likely to adversely affect" the bog turtle. If surveys reveal presence of this species, then FWS will work with the NPS and applicant to develop Conservation Measures to avoid impacts (*e.g.*, move tower locations). If impacts cannot be fully avoided, formal consultation may be necessary; in this case, FWS would work to expedite issuance of a BO in recognition of NPS' firm schedule to complete the NEPA process.

¹ <http://www.fws.gov/northeast/njfieldoffice/pdf/bogturtlesurvey.pdf>

Outside NPS Units

Alternatives 2 and 2b: Bog turtle survey work along Alternatives 2 and 2b has conducted been by the applicant, and Conservation Measures have been developed with FWS input. Outside NPS units, the FWS does not anticipate adverse effects to the bog turtle from Alternatives 2 or 2b; however, our analysis of this route is not yet complete (*e.g.* there are a few outstanding survey reports, Conservation Measures need to be finalized, and blasting has not yet been considered).

Alternatives 3-5: If Alternative 3, 4 or 5 is selected, Phase 1 bog turtle surveys should be conducted for any wetlands within 300 feet of the proposed project route in New Jersey, and in Monroe and Northampton Counties, Pennsylvania, for all portions of the selected route that were not already covered by surveys for Alternative 2 and 2b. FWS and NPS are currently working out a process by which impacts to federally listed species outside NPS units can be evaluated.

Indiana bat (DEIS page 186)

Within NPS Units

Alternatives 2 and 2b: Comments regarding the federally listed (endangered) Indiana (*Myotis sodalis*) bat were included in PAFO's January 27, 2010 letter and NJFO's October 21, 2010 letter. For Alternatives 2 and 2b, surveys for this species were carried out between May 27 and August 12, 2009 in accordance with the FWS Indiana bat mist-net survey guidelines. No Indiana bats were found. Portal searches in these areas, conducted between May 5 and May 9, 2009, also revealed no Indiana bats. Consequently, Alternatives 2 and 2b would not be likely to adversely affect Indiana bats within NPS units.

No further Indiana bat surveys are recommended within NPS units along Alternatives 2 or 2b. If additional information about possible impacts of Alternatives 2 and 2b (*e.g.*, blasting) has become available since our previous review, FWS may reconsider our previous recommendations and/or determinations.

Alternatives 3-5: FWS understands that NPS is undertaking Indiana bat habitat assessments along Alternatives 3, 4, and 5 within NPS units. Results of the habitat assessments should be evaluated by the agencies prior to initiating presence/absence surveys. FWS will likely recommend mist-net surveys and portal searches, to be carried out by a recognized, qualified Indiana bat surveyor for all areas of suitable habitat not covered by the previous surveys. Mist-net surveys should be carried out in forested portions of these alternatives, while portal searches should be carried out along the entire length (if not previously surveyed). Mist-net surveys for this species need to be carried out between May 15 and August 15.²

If properly implemented species surveys are negative, then the project activities along these routes within NPS units would be considered "not likely to adversely affect" the Indiana bat. If surveys reveal presence of this species, then FWS will work with the NPS and applicant to

² <http://www.fws.gov/northeast/njfieldoffice/pdf/lbatsurvey.pdf>
<http://www.fws.gov/northeast/njfieldoffice/pdf/lbattelemetryNJ.pdf>

develop Conservation Measures to avoid impacts (e.g., move tower locations). If impacts cannot be fully avoided, formal consultation may be necessary; in this case, FWS would work to expedite issuance of a BO in recognition of NPS' firm schedule to complete the NEPA process.

Outside NPS Units

Alternatives 2 and 2b: Indiana bat survey work along Alternatives 2 and 2b has been conducted by the applicant and Conservation Measures developed with FWS input. Outside NPS units, the FWS does not anticipate adverse effects to the Indiana bat from Alternatives 2 or 2b; however, our analysis of this route is not yet complete (e.g., there are a few outstanding survey reports, Conservation Measures need to be finalized, and blasting has not yet been considered).

Alternatives 3-5: If Alternative 3, 4 or 5 is selected, mist-net surveys and portal searches should be conducted by a recognized, qualified Indiana bat surveyor for all areas of suitable habitat not covered by the previous surveys. FWS and NPS are currently working out a process by which impacts to federally listed species outside NPS units can be evaluated.

BALD EAGLE

As described in the DEIS, several alternatives under consideration have the potential to impact nesting and/or wintering bald eagles (*Haliaeetus leucocephalus*). The Kittanny Ridge and an important eagle wintering area along the Delaware River are of particular concern. As noted in the DEIS, FWS recommends adherence to the National Bald Eagle Management Guidelines³ to minimize impacts to this species, and ensure compliance with the Eagle Act. The FWS is working with NPS to evaluate the need for any permit(s) under the Eagle Act for the various alternatives under consideration.

OTHER MIGRATORY BIRDS

The FWS is the principal Federal agency charged with protecting and enhancing populations and habitat of migratory bird species. The MBTA 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 enforcement action on those individuals, companies, or agencies that take migratory birds with disregard for their actions and the law.

As discussed in the DEIS, the potential exists for avian mortality from electrocutions or collisions with power lines as well as direct impacts from habitat loss for wintering, migrating, and breeding migratory birds and indirect impacts from fragmentation, site avoidance, and disturbance of birds within the project boundaries. Electrocutions from power lines are of particular concern to raptors, as their size, hunting strategy, and nesting preferences make them

³ <http://www.fws.gov/migratorybirds/CurrentBirdIssues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf>

particularly vulnerable. Other species, such as corvids (crows and ravens) and cormorants also show an affinity for nesting on power lines. Collisions are most common at night, or under low visibility conditions, because migratory birds and land birds either cannot see the utility lines, or they lack the ability to negotiate obstacles quickly enough to avoid them. 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); and landscape features.

The Avian Power Line Interaction Committee (APLIC⁴) and the Service⁵ have developed guidelines for power lines to minimize impacts from existing facilities and in the construction of new utility and energy systems and associated infrastructure. According to the DEIS, any “build” alternative selected by NPS would be constructed according to APLIC standards, and the best available deterrence technology would be used.

In addition to following the APLIC standards, we offer the following recommendations to avoid and minimize impacts to migratory birds within and around the project area.

1. Work with FWS to revise and finalize the draft Avian Protection Plan (APP) previously developed by PSE&G to minimize the risk of electrocution, collision, disturbance and habitat impacts for migratory birds. The APP should apply minimum standards along the length of the line, with enhanced protections in sensitive areas.
2. Report bird mortalities and injuries resulting from electrocutions or collisions on the Service’s online Bird Fatality/Injury Reporting Program⁶ (Bird Report program). The Bird Report program was designed, with significant industry input and feedback, to provide a user-friendly, easily-accessed, method of allowing members of the electric utility industry to voluntarily report bird mortalities and injuries resulting from electrocutions or collisions with electrical utility equipment. Collecting information about the locations and circumstances under which birds are killed or injured on power equipment serves the primary purpose of determining how to prevent future bird interactions. The database is intended for use by utilities to see which structures and equipment are hazardous to birds, and under what conditions, and assists in evaluating and enhancing the effectiveness of retrofitting.
3. Minimize land and vegetation disturbance and reduce habitat fragmentation during project design and construction, especially if habitat cannot be fully restored after construction. Where practicable, concentrate construction activities, infrastructure, and man-made structures (*e.g.*, poles, roads) on lands already altered or cultivated, and away from areas of intact and healthy native habitats. Co-locate roads, staging areas, and other infrastructure in or immediately adjacent to already-disturbed areas (*e.g.*, existing rights-of-way, agricultural fields). If co-location is not feasible, select fragmented or degraded habitats rather than relatively intact areas.

⁴ www.aplic.org

⁵ <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/BirdHazards.html>

⁶ <https://birdreport.fws.gov/>

4. Where disturbance is necessary, clear natural or semi-natural habitats (*e.g.*, forests, woodlots, reverting fields, shrubby areas) between September 1 and March 14, 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, fledglings).
5. Avoid permanent habitat alterations in areas where birds are highly concentrated or where sizable prey bases exist. Avoid establishing sizable structures along known bird migration pathways or known daily movement flyways (*e.g.*, between roosting and feeding areas). Examples of high concentration areas for birds are wetlands, State or Federal refuges, Audubon Important Bird Areas, private duck clubs, rookeries, roosts, and riparian areas.
6. 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.
7. Work with FWS to include protective measures for migratory birds into the Vegetation Management Program for each State.

CONCLUSION

The FWS appreciates the opportunity to review the DEIS. FWS will continue working cooperatively with NPS through finalization of the EIS and completion of consultation under Section 7 of the ESA. Please contact Wendy Walsh at (609) 383-3938, extension 48, if you have any questions about the above comments, or require further assistance regarding federally listed threatened or endangered species.

Sincerely,



J. Eric Davis Jr.
Field Supervisor

Enclosure: Specific comments on language in the DEIS

cc: RO, Alex Hoar, Glenn Smith, Paul Phifer, Scott Kahan
PAFO, Pam Shellenberger, Clint Riley
Wallkill NWR, Mike Horne

Amanda J. Stein, Biologist/Project Manager
Delaware Water Gap National Recreation Area
1 River Road
Bushkill, Pennsylvania 18324-9999

National Park Service Denver Service Center – TIC
Attn: SRLINE EIS
12795 W. Alameda Parkway
Denver, Colorado 80225-0287

**Susquehanna to Roseland Transmission Line EIS – DEWA Internal Review Comment Form
Draft EIS (November 21, 2011 to January 31, 2012)**

Reviewer's Name (Initials) :

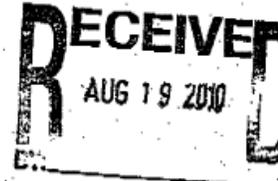
	Initials	Page #	Section, paragraph, line #	Your Comment / Proposed Revision	For Consultant's Response / Resolution
1.	wlw	181	Golden-winged warbler	Please change this statement, "The species is federally listed as a species of special concern..." to read, "USFWS is conducting a status review of the golden-winged warbler in response to a petition to list this species under the ESA...."	
2.	wlw	186	small-footed bat	Please change this statement, "The species is federally listed as a species of special concern..." to read, "USFWS is conducting a status review of the small-footed bat in response to a petition to list this species under the ESA...."	
3.	wlw	187	Northern myotis	Please to read, "USFWS is conducting a status review of the Northern myotis in response to a petition to list this species under the ESA. This species is also listed as a species of special concern in Pennsylvania."	
4.	wlw	436	Consultation	NPS is currently preparing a BA for this project, consistent with policy that requires a BA for all "major construction activities" that "may affect" listed species. Please revise this section in the FEIS to reflect the current status of the consultation at that time.	
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Pennsylvania Fish & Boat Commission

Division of Environmental Services
 Natural Diversity Section
 450 Robinson Lane
 Bellefonte, PA 16823-9620
 (814) 359-5237 Fax: (814) 359-5175

August 16, 2010



IN REPLY REFER TO:
 SIR# 33368

John J. Donahue
 Delaware Water Gap National Recreation Area
 HQ 1 River Road, off US 209
 Bushkill, PA 18324-9999

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
 EIS for Electric Transmission Line Expansion across NPS lands
 Multiple Townships/Boroughs, Pike, Monroe, and Northampton Counties, Pennsylvania

Dear Mr. Donahue:

I have examined the maps accompanying your recent correspondence, which shows the location of six proposed alternatives for the above-referenced project. Based on records maintained in the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files, the bog turtle (*Glyptemys muhlenbergii*, state endangered, federal threatened), the timber rattlesnake (*Crotalus horridus*, PA candidate) and several rare or protected freshwater mussel and fish species are known from portions of the project area within the three NPS units in northeastern Pennsylvania. Results of our review by alternative are in the table below, and following is a description of recommended actions for each of the species of concern.

Alternative #	Potential conflicts within NPS boundaries	Potential conflicts over route in PA (based on shapefiles provided for review)
2	Bog Turtle, Mussels in Delaware River	Timber Rattlesnake
3	Mussels in Delaware River	Bog Turtle
4	Timber Rattlesnake	Bog Turtle, Timber Rattlesnake, state endangered fish species, Mussels in Delaware River
5	Timber Rattlesnake	Bog Turtle, Timber Rattlesnake, Mussels in Delaware River
6	Timber Rattlesnake	Bog Turtle, Blue-spotted Salamander (both require direct consultation for avoidance of impact), Mussels in Delaware River
7	Timber Rattlesnake	Bog Turtle, Blue-spotted Salamander (both require direct consultation for avoidance of impact), Timber Rattlesnake, Mussels in Delaware River

Our Mission:

www.fish.state.pa.us

To protect, conserve and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities.

Bog Turtle

The bog turtle is a small (up to a 4 inch carapace) semi-aquatic, omnivorous turtle that prefers open marshy wetlands associated with springs and groundwater, specific vegetative communities and mucky soils for burrowing. This species is restricted to the southcentral and southeast portions of Pennsylvania. However, due to the lack of pristine habitat found in its range from disturbance and plant successional processes, the bog turtle has, in some cases, become accustomed to disturbed, low quality wetland complexes often with semi-closed canopies. Bog turtles are also known to be transients in forested habitat that are associated with springs and small streams leading to more open marshes. They use these habitats as dispersal corridors to other wetlands. The bog turtle is threatened by habitat destruction, poor water quality and poaching.

Alternative 2 will pass through a wetland on federal lands known to support the bog turtle, thus potentially resulting in adverse impacts to the bog turtle and its habitat. Consultation with both the PFBC and the US Fish and Wildlife Service will be required to avoid impacts to the bog turtle if this alternative is chosen. Details regarding the route alignment, proposed project activities, and project plans should be sent to the agencies for review. Alternatives identified above with bog turtle conflicts outside the boundaries of the NPS property will require further coordination between the electric company and the agencies if there will be wetland impacts associated with the lines.

Fish and Mussels

Freshwater mussels are the most imperiled taxonomic group in North America. Nearly half of the species known to occur in the Commonwealth are now extirpated (locally extinct) from Pennsylvania. The freshwater mussel species and fish species known from the project area are especially vulnerable to physical (dredging, rip-rap, etc.) and chemical (pH, dissolved oxygen, temperature, heavy metals and organic contaminants) changes to their aquatic environment. We are concerned about direct and indirect (i.e., runoff) effects that the proposed project may have on the species of concern. Therefore, we recommend using directional boring or attaching to existing bridges for the following stream/river crossings:

<u>River/stream name</u>	<u>Species at risk</u>
Delaware River (all Alternatives)	rare mussels, multiple species
Marshall's Creek (Alternative 4)	state endangered fish

Open cutting will most likely adversely impact the species of concern. Work should be conducted from the bank (e.g., no in-stream disturbance). Likewise, no erosion or sediment should be allowed to enter into the river (e.g., strict erosion and sedimentation control measures need to be employed). **Provided that instream impacts will be avoided with these aforementioned crossings, then I do not anticipate the proposed activity to have any significant adverse impacts to the fish or mussel species of special concern or any other rare or protected species under Pennsylvania Fish & Boat Commission jurisdiction. However, if these recommendations cannot be adhered to, further consultation with this office will be necessary.**

Timber Rattlesnake

Timber rattlesnakes occur in the forested, mountainous regions of the Commonwealth. They prefer forested areas to forage for small mammals (e.g., mice and chipmunks) and southerly-facing slopes for hibernating and other thermoregulatory activities. The timber rattlesnake is threatened by habitat loss/alteration, wanton killing, and poaching.

Given the proximity of the project to known timber rattlesnake den areas, we recommend that a timber rattlesnake habitat assessment be conducted in the project area for those alternatives identified

above by a recognized/qualified timber rattlesnake surveyor. For guidance on areas of conflict with the timber rattlesnake on lands outside the jurisdiction of the NPS, the "applicants" should contact this office. We have included a list of PFBC qualified/recognized surveyors and habitat assessment protocol for your convenience. Upon completion of the habitat survey, the recognized/qualified rattlesnake biologist is to submit a report to this office (Natural Diversity Section) for review and comment. The habitat survey report should include color photographs of the project area and a description of habitats occurring within the immediate area to be developed (including access roads), as well as the surrounding area. Potential timber rattlesnake foraging, denning and/or basking areas should be photographed and mapped accordingly. In addition, the report should also include detailed project plans and maps with a description of the proposed work (including access roads), project impacts and alternatives. Pending the review of this information, a survey targeting the presence of the timber rattlesnake in the project area and/or other project modifications may be requested in order to avoid impacts to timber rattlesnake critical habitat.

Note that this office performed no field inspection of the project area. Consequently, comments in this letter are not meant to address other issues or concerns that might arise concerning matters under Pennsylvania Fish and Boat Commission jurisdiction or that of other authorities. Please contact Kathy Gipe of my staff at (814) 359-5186 if you have any additional concerns regarding this response. In any future correspondence with us regarding this specific project, please refer to the SIR tracking number indicated above. Thank you for your cooperation and attention to this matter of nongame species conservation.

Sincerely,



Christopher A. Urban, Chief
Natural Diversity Section

CAU/KDG/mr

Cc: Pamela Shellenberger, USFWS
Tracey Librandi Mumma, PGC
Rebecca Bowen, DCNR