



August 21, 2015

Gary Smith
PA Fish & Boat Commission
Bureau of Wildlife Habitat Management
Division of Environmental Services
450 Robinson Lane
Bellefonte PA 16823

**Subject: PFBC SIR # 41856
Request for a No Impact Determination for Timber Rattlesnakes
Sunoco Pipeline, L.P. - Pennsylvania Pipeline Project (Previously Part of
the Mariner East 2 Pipeline Project)**

Dear Mr. Smith:

Tetra Tech, Inc. (Tetra Tech) has been retained by Sunoco Pipeline, L.P. (SPLP) to conduct environmental field surveys and permitting services for the proposed Pennsylvania Pipeline Project (PPP) formerly part of the Mariner East 2 Pipeline Project (ME2). On behalf of SPLP, Tetra Tech is requesting a no impact determination from the Pennsylvania Fish & Boat Commission (PGC) for the PPP.

A Large Project Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Request including a large project form, project description, and preliminary project USGS topographic mapping was initially provided to the PGC under the preliminary project name "Mariner East 2 Pipeline - Trans-Pennsylvania" on December 12, 2013. We received a response letters dated January 27, 2014 and May 21, 2014 from PFBC. Those letters are included for reference as Attachment 1. The Mariner East 2 Project was originally going to encompass all of the project activities within the state of Pennsylvania (PA). After field activities began, the project was split into two separate and independent projects; the Ohio Pipeline Project (OPP) and the PPP. Initially, a 20-inch diameter pipeline would be installed within a 50-foot-wide right-of-way (ROW) from Houston, PA to Marcus Hook, PA (306 miles) and a second, up to 20-inch diameter pipeline, would be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, Pennsylvania to the Marcus Hook facility, paralleling the initial line for approximately 255 miles. (Attachment 2).

PGC indicated that the timber rattlesnake (*Crotalus horridus*) was located within the vicinity of the Mariner East 2 Project. Nineteen areas that potentially contain suitable habitat were identified within in the mountainous parts of Indiana, Cambria, Blair, Huntingdon, Juniata, Perry, and Cumberland Counties. Habitat assessments and presence/absence surveys were conducted from May 2014 to July 2015 by PFBC approved timber rattlesnake biologists following protocols during the appropriate survey periods based on PFBC guidelines. Results for these surveys are included the attached Timber Rattlesnake Habitat Assessment and Presence/Absence Survey Report (Attachment 3).

Tetra Tech

661 Anderson Drive, Foster Plaza VII, Pittsburgh, PA 15220
Tel 412.921.7090 **Fax** 412.921.7090 www.tetrattech.com



Gestation and den habitat was confirmed in 8 of the 19 survey areas. These habitats include 8 denning habitats and 15 gestation habitats. A total of 282 timber rattlesnakes were observed across 16 of the 19 survey areas. These results are summarized in Table 1. Five of the eight areas with confirmed denning habitat were determined to be within the Limit of Disturbance (LOD) and the proposed Project. Based upon these results, the project was shifted to avoid these areas. Similarly, six of the 15 confirmed gestation habitats were determined to be within the LOD of the proposed Project. However, avoidance of gestation habitats was considered to be unnecessary given additional mitigation measures presented in the attached Timber Rattlesnake Conservation Plan (Attachment 4). Monitoring for and relocation of timber rattlesnakes will also be an additional mitigation measure in 11 areas (see Attachment 4). As a general practice, following completion of construction, boulders and other rocky debris will be moved to the edge of the temporary cleared workspace during final cleanup activities to aid in providing habitat. These and other avoidance, minimization, and mitigation measures are discussed in detail in the attached Conservation Plan. Given these measures, impacts to timber rattlesnakes are expected to be minor and temporary.

PFBC identified the bog turtle as potentially occurring within the Project area. PFBC has delegated coordination/consultation of joint state/federally listed species impact reviews to the PA Field Office of the U.S. Fish and Wildlife Service (USFWS). Bog turtle surveys have been completed for the entire Project and coordination has been ongoing with USFWS.

PFBC also identified freshwater mussel species: yellow lampmussel (*Lampsilis cariosa*), rainbow mussel (*Villosa iris*), elktoe (*Alasmidonta marginata*), and triangle floater (*Alasmidonta undulata*); fish species: ghost shiner (*Notropis buchanani*) and brook stickleback (*Culaea inconstans*), and the Eastern red belly turtle (*Pseudemys rubriventris*) as potentially occurring within the Project area. These species will be addressed in a separate submittal, and at this time we would like review and determination concurrence in regards to only the Timber rattlesnake.

On behalf of SPLP, Tetra Tech would like to request the PFBC review of and concurrence with our no impacts determination for the timber rattlesnake. Thank you for your assistance in this matter. If you have any questions regarding this request, please feel free to contact me at 412.921.8167 or preston.smith@tetrattech.com.

Sincerely,

A handwritten signature in black ink, appearing to be 'P. Smith', written over a light blue horizontal line.

Preston R. Smith
Manager, Wetlands and Ecological Services Department



Attachments:

- PA Fish & Game Commission PNDI Response Package
- Pennsylvania Pipeline Project Map
- Timber Rattlesnake Habitat Assessment and Presence/Absence Survey Report
- Timber Rattlesnake Conservation Plan

CC: Chris Embry, Sunoco Logistics
Matt Gordon, Sunoco Logistics
Brad Schaffer, Tetra Tech
Sandy Lare, Tetra Tech
File 112IC05958

ATTACHMENT 1



Pennsylvania Fish & Boat Commission

Division of Environmental Services

Natural Gas Section
450 Robinson Lane
Bellefonte, PA 16823

January 27, 2014

IN REPLY REFER TO
SIR# 41856

TETRA TECH
Preston Smith
661 Andersen Drive
Pittsburgh, Pennsylvania 15220

**RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No.
Sunoco Mariner East 2 Pipeline
ALLEGHENY County: - BERKS County: - BLAIR County: - CAMBRIA County: -
CHESTER County: - CUMBERLAND County: - DAUPHIN County: - DELAWARE
County: - HUNTINGDON County: - INDIANA County: - JUNIATA County: -
LANCASTER County: - LEBANON County: - PERRY County: - WASHINGTON
County: - WESTMORELAND County: - YORK County:**

Dear Preston Smith:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search “potential conflict” or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

Timber Rattlesnake (*Crotalus horridus*, PA Candidate)

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.

Based on the review of this information and the proximity of the project to known critical habitat of the Timber Rattlesnake, we recommend completion of a **habitat assessment** to determine presence/absence of potential habitat at the proposed project areas:

Our Mission:

www.fish.state.pa.us

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

County	Potential Conflict	Western End of Habitat Assessment		Eastern End of Habitat Assessment		Comment
		Latitude	Longitude	Latitude	Longitude	
Cambria	Timber Rattlesnake	40.423856	-78.918485	40.419370	-78.884942	Laurel Ridge South Exposure
Blair	Timber Rattlesnake	40.465277	-78.489083	40.464433	-78.444829	West of Altoona
Huntingdon	Timber Rattlesnake	40.348146	-77.953475	40.337198	-77.912710	Jacks Mountain, SGL 71
Huntingdon	Timber Rattlesnake	40.329852	-77.820093	40.312663	-77.745830	Blacklog Mountain, Shade Mountain
Perry	Timber Rattlesnake	40.289980	-77.635604	40.284410	-77.612818	Conococheague Mountain, Tuscarora State Forest
Perry	Timber Rattlesnake	40.266702	-77.508005	40.262470	-77.491688	Bowers Mountain, Tuscarora State Forest
Cumberland	Timber Rattlesnake	40.256799	-77.469902	40.251875	-77.448899	Blue Mountain
Cumberland	Timber Rattlesnake	40.246850	-77.428032	40.245663	-77.385058	Wildcat Ridge, Tuscarora State Forest

We have included a list of qualified surveyors and habitat assessment protocol for your convenience. This list is not an exhaustive list of qualified rattlesnake surveyors in Pennsylvania as there may be qualified surveyors who have not asked to be placed on this list. It is not mandatory that you use someone on this list.

Freshwater Mussels

The following rare freshwater mussel species are known from the vicinity of the project area:

County	Potential Conflict	Latitude	Longitude	Water Name
Huntingdon	Yellow Lampmussel (<i>Lampsilis cariosa</i>)	40.342806	-77.853210	Aughwick Creek
Huntingdon	Rainbow Mussel (<i>Villosa iris</i>)	40.342806	-77.853210	Aughwick Creek
Juniata	Rainbow Mussel (<i>Villosa iris</i>)	40.301386	-77.696168	Tuscarora Creek
Cumberland	Rainbow Mussel (<i>Villosa iris</i>)	40.239506	-77.176329	Conodoguinet Creek
Cumberland	Elktoe (<i>Alasmidonta marginata</i>)	40.239506	-77.176329	Conodoguinet Creek
Cumberland	Triangle Floater (<i>Alasmidonta undulata</i>)	40.239506	-77.176329	Conodoguinet Creek
Cumberland	Yellow Lampmussel (<i>Lampsilis cariosa</i>)	40.239506	-77.176329	Conodoguinet Creek

Freshwater mussels are the most imperiled taxonomic group in North America. Nearly 20% of the species historically known to occur in the Commonwealth are now extirpated (locally extinct). Additionally 60% of Pennsylvania's remaining species are of conservation concern. We are concerned about direct and indirect (i.e., runoff) effects that the proposed project may have on the species of concern. The freshwater mussel 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. Therefore, **we recommend using directional boring** rather than open cutting for the Aughwick Creek, Tuscarora Creek, and Conodoguinet Creek crossings. 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 directional boring methodology is used, in-stream work is avoided, strict E&S control measures are maintained, and best management practices are employed, we do not foresee any significant adverse impacts from the proposed activity to the mussel species of special concern. **The applicant should implement the following contingencies to prevent impacts to water quality from drilling/boring operations:**

- Have a designated environmental inspector on site for the duration of the entire crossing operation
 - Stop the bore/drill immediately if anyone on site observes an Inadvertent Return.
 - Have a Vac Truck on site or on call (within three hours) to begin clean-up of the release in the stream channel to prevent downstream migration of drilling fluids
 - Notify PFBC Bureau of Law Enforcement Regional Office within 24 hours
- http://fishandboat.com/dir_regions.htm (NC 814-359-5250; NE 570-477-5717; NW 814-337-0444; SW 814-445-8974)

Additionally, any release of sediment to the stream should be reason to initiate contact with the PFBC Bureau of Law Enforcement to address these issues. Any unauthorized disturbance, unpermitted discharge, or release of sediment(s) that is determined to be a pollution event (generally described <http://www.fish.state.pa.us/fishpub/summary/reporting.html>) per the Pennsylvania Fish and Boat Code will be subject to the appropriate legal enforcement action.

If, however, the work will necessitate any direct (e.g. equipment intrusion) or indirect impacts (e.g. runoff) to Aughwick Creek, Tuscarora Creek, and Conodoguinet Creek, a mussel survey & relocation should be conducted to avoid potential impacts to these rare mussel species. It is recommended that a qualified malacologist complete a mussel survey to identify any mussel species present and determine their abundance. Additionally, if mussels are encountered it is recommended that the mussels in the area of direct impact be relocated to suitable habitat outside of the disturbance area.

A list of qualified malacologists and a Pennsylvania Fish & Boat Commission approved mussel survey protocol is enclosed for your convenience when arranging for a mussel survey. Prior to conducting a survey, qualified malacologist should submit a proposed survey and relocation plan to this office. Upon completion of the mussel survey and relocation, please send a copy of the final report to this office for further evaluation.

Fish

The following rare or protected fish species are known from the vicinity of the project area:

County	Potential Conflict	Latitude	Longitude	Water Name
Washington / Allegheny	Ghost Shiner (<i>Notropis buchanani</i> , PA Endangered)	40.230011	-79.971321	Monongahela River
Cambria	Brook Stickleback (<i>Culaea inconstans</i> , PA Candidate)	40.449661	-78.605685	Little Conemaugh River

The fish species known from the project area are especially vulnerable to physical (dredging, substrate modification, etc.) and chemical (turbidity, pH, dissolved oxygen, temperature, heavy metals and organic contaminants) changes to their aquatic environment. Although the mobile adults of these protected fish species may be capable of moving from the project area, their spawning grounds (including eggs, fry, and immature fish) are vulnerable to burial, crushing by equipment, and siltation from in-stream construction projects. We are concerned about potential impacts to the fish, eggs and the hatching fry from any instream work.

Provided that directional boring is used for the Monongahela River and Little Conemaugh River crossings, in-stream work is avoided, strict E&S control measures are maintained, and best management practices are employed, we do not foresee any significant adverse impacts from the proposed activity to the fish species of special concern.

If, however, the Monongahela River work will necessitate any direct impacts such as instream work or open cut stream crossings, we will need more information to allow for a more thorough evaluation of potential adverse impacts from the proposed project. Items such as a detailed narrative accurately describing the crossing including possible instream work, sequence of activities, basic site plans and map, aerial maps of the general area, project alternatives, acreage to be impacted, general habitat descriptions or onsite color photographs (keyed to a site map) would expedite our review process. Pending the review of this information a survey for the species of concern may be warranted.

If, however, the Little Conemaugh River work will necessitate any direct impacts such as instream work or open cut stream crossings, we request that all in-stream activity be avoided from April 1 to June 15 in order to avoid adverse impacts during the spawning season for the Brook Stickleback. Likewise, all work should be done during low flow periods, and strict erosion and sedimentation control measures need to be employed. Provided that these recommendations are followed, as well as best management practices and an approved erosion and sedimentation control plan is maintained, then we do not anticipate the proposed activity to have any significant adverse impacts to the fish species of special concern.

Eastern Redbelly Turtle (*Pseudemys rubriventris*, PA Threatened)

The eastern redbelly turtle is one of Pennsylvania's largest native aquatic turtles. This turtle species is known to inhabit relatively large, deep streams, rivers, ponds, lakes, and marshes with permanent water and ample basking sites. Redbelly turtles are restricted to the southcentral and southeastern regions of the Commonwealth. The existence of this turtle species is threatened by habitat destruction, poor water quality and competition with aggressive non-native turtle species that share its range and habitat (e.g. red-eared slider).

If large, deep streams, rivers, ponds, lakes and wetlands with permanent water or the area within 300ft of these water features in Chester and Delaware counties are to be disturbed from the

project activity, we request completion of a habitat assessment to determine presence/absence of potential redbelly turtle habitat and/or nesting habitat at the proposed project area.

A qualified biologist, who possesses the necessary Scientific Collector's Permit issued by the Pennsylvania Fish and Boat Commission, must conduct this habitat/nesting habitat assessment. A list of biologists recognized as qualified by the Pennsylvania Fish and Boat Commission to perform redbelly turtle surveys is enclosed. Following completion of the assessment, a report of the qualified redbelly turtle biologist's observations and conclusions must be submitted to this office for further review and consultation.

However, if permanent water wetlands, vernal pools, or water bodies or the area within 300ft of these water features in Chester and Delaware counties are not to be disturbed in any way by the proposed activity, and provided that best management practices are employed and strict erosion and sedimentation measures are maintained, I do not foresee any adverse impacts to the Eastern Redbelly Turtle from the proposed project.

Bog Turtle (*Glyptemys muhlenbergii*, PA Endangered, Federal Threatened)

In an effort to streamline our threatened and endangered species environmental review process, reduce the redundancy in project reviews and ease our staff workload, the Pennsylvania Fish and Boat Commission has delegated coordination/consultation of joint state/federally listed species impact reviews to the PA Field Office of the U.S. Fish and Wildlife Service (USFWS). Please send your project materials *if you have not already done so* to them at: **U.S. Fish and Wildlife Service, Endangered Species Section, 315 South Allen St, Suite 322, State College, PA 16801-4851.**

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Gary Smith at 814-279-3080 and refer to the SIR # 41856. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,



Heather A. Smiles, Chief
Natural Gas Section

HAS/GAS/dn



Pennsylvania Fish & Boat Commission

Division of Environmental Services

Natural Gas Section
450 Robinson Lane
Bellefonte, PA 16823

May 21, 2014

IN REPLY REFER TO

SIR# 41856 – Addition to January 27, 2014 letter

TETRA TECH
Preston Smith
661 Andersen Drive
Pittsburgh, Pennsylvania 15220

**RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No.
Sunoco Pennsylvania Pipeline
ALLEGHENY County: - BERKS County: - BLAIR County: - CAMBRIA County: -
CHESTER County: - CUMBERLAND County: - DAUPHIN County: - DELAWARE
County: - HUNTINGDON County: - INDIANA County: - JUNIATA County: -
LANCASTER County: - LEBANON County: - PERRY County: - WASHINGTON
County: - WESTMORELAND County: - YORK County:**

Dear Preston Smith:

Based on further review of the project, additional Timber Rattlesnake (*Crotalus horridus*) habitat besides those areas identified in our January 27, 2014 letter could be present within the proposed disturbance area. These are in addition to the search areas we previously provided and do not overlap any of the areas we previously recommended. We apologize for not bringing these additional Timber Rattlesnake habitat assessment areas to your attention in our earlier review; it was an omission on our part. Therefore, we recommend additional Timber Rattlesnake habitat assessment in the areas listed in Table 2 along with the areas listed in Table 1 from our January 27, 2014 letter to confirm whether or not the project site contains Timber Rattlesnake habitat and to determine the potential for adverse impacts to this species.

Table 1. Original Timber Rattlesnake Habitat Assessments Areas on the Pennsylvania Pipeline as listed in our January 27, 2014 letter.

County	Potential Conflict	Western End of Habitat Assessment		Eastern End of Habitat Assessment		Comment
		Latitude	Longitude	Latitude	Longitude	
Cambria	Timber Rattlesnake	40.423856	-78.918485	40.419370	-78.884942	Laurel Ridge South Exposure
Blair	Timber Rattlesnake	40.465277	-78.489083	40.464433	-78.444829	West of Altoona
Huntingdon	Timber Rattlesnake	40.348146	-77.953475	40.337198	-77.912710	Jacks Mountain, SGL 71
Huntingdon	Timber Rattlesnake	40.329852	-77.820093	40.312663	-77.745830	Blacklog Mountain, Shade Mountain
Perry	Timber Rattlesnake	40.289980	-77.635604	40.284410	-77.612818	Conococheague Mountain, Tuscarora State Forest
Perry	Timber Rattlesnake	40.266702	-77.508005	40.262470	-77.491688	Bowers Mountain, Tuscarora State Forest
Cumberland	Timber Rattlesnake	40.256799	-77.469902	40.251875	-77.448899	Blue Mountain
Cumberland	Timber Rattlesnake	40.246850	-77.428032	40.245663	-77.385058	Wildcat Ridge, Tuscarora State Forest

Table 2. Additional Timber Rattlesnake Habitat Assessments Areas on the Pennsylvania Pipeline:

County	Potential Conflict	Western End of Habitat Assessment		Eastern End of Habitat Assessment		Comment
		Latitude	Longitude	Latitude	Longitude	
Indiana / Cambria	Timber Rattlesnake	40.43147	-78.96987	40.42383	-78.91892	Laurel Ridge
Blair	Timber Rattlesnake	40.44429	-78.58242	40.46527	-78.48908	South of Gallitzin
Blair	Timber Rattlesnake	40.43944	-78.29419	40.43324	-78.26747	Lock Mountain
Blair / Huntingdon	Timber Rattlesnake	40.41387	-78.18891	40.40363	-78.16306	Tussey Mountain
Huntingdon	Timber Rattlesnake	40.36880	-78.06593	40.36017	-78.02839	Terrace Mountain
Huntingdon	Timber Rattlesnake	40.35668	-78.00744	40.34815	-77.95347	Sideling/Jacks Mountains
Juniata / Perry	Timber Rattlesnake	40.29864	-77.68276	40.29433	-77.65788	Tuscarora Mountain
Perry	Timber Rattlesnake	40.29291	-77.65075	40.28998	-77.63560	Conococheague Mountain
Perry	Timber Rattlesnake	40.27856	-77.57443	40.26670	-77.50800	Schultz/Bowers Mountains
Perry	Timber Rattlesnake	40.26247	-77.49168	40.25679	-77.46990	Blue Mountain

We provided a list of qualified surveyors and habitat assessment protocol for your convenience with our January 27, 2014 letter. This list is not an exhaustive list of qualified rattlesnake surveyors in Pennsylvania as there may be qualified surveyors who have not asked to be placed on this list. It is not mandatory that you use someone on this list.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Gary Smith at 814-279-3080 and refer to the SIR # 41856. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

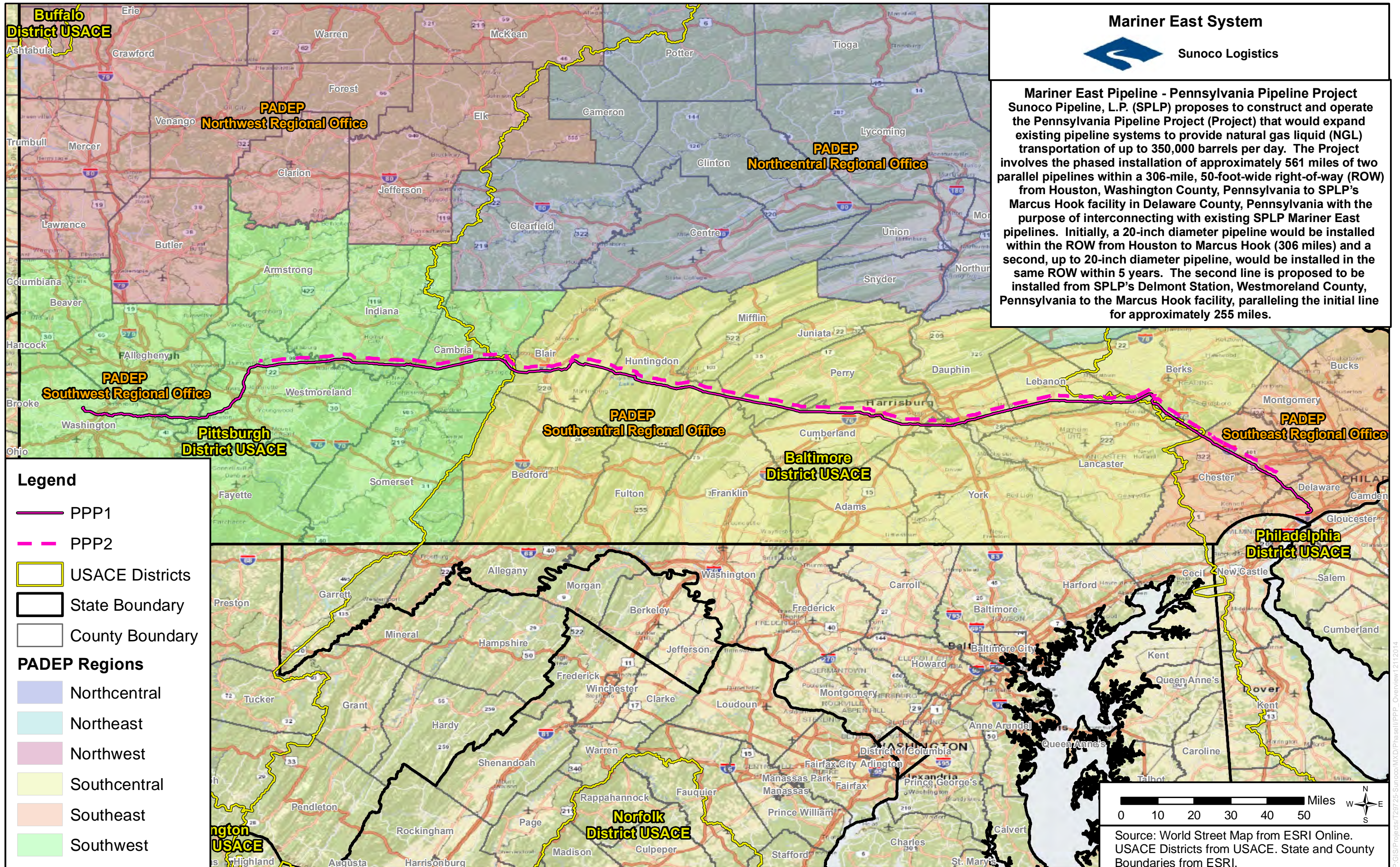
Sincerely,

A handwritten signature in black ink that reads "Heather Smiles". The signature is written in a cursive, flowing style.

Heather A. Smiles, Chief
Natural Gas Section

HAS/GAS/dn

ATTACHMENT 2



Mariner East System

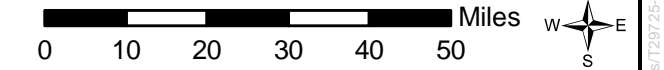


Sunoco Logistics

Mariner East Pipeline - Pennsylvania Pipeline Project
 Sunoco Pipeline, L.P. (SPLP) proposes to construct and operate the Pennsylvania Pipeline Project (Project) that would expand existing pipeline systems to provide natural gas liquid (NGL) transportation of up to 350,000 barrels per day. The Project involves the phased installation of approximately 561 miles of two parallel pipelines within a 306-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, Pennsylvania to SPLP's Marcus Hook facility in Delaware County, Pennsylvania with the purpose of interconnecting with existing SPLP Mariner East pipelines. Initially, a 20-inch diameter pipeline would be installed within the ROW from Houston to Marcus Hook (306 miles) and a second, up to 20-inch diameter pipeline, would be installed in the same ROW within 5 years. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, Pennsylvania to the Marcus Hook facility, paralleling the initial line for approximately 255 miles.

Legend

- PPP1
 - - - PPP2
 - USACE Districts
 - State Boundary
 - County Boundary
- PADEP Regions**
- Northcentral
 - Northeast
 - Northwest
 - Southcentral
 - Southeast
 - Southwest



Source: World Street Map from ESRI Online.
 USACE Districts from USACE. State and County Boundaries from ESRI.

ATTACHMENT 3

Note: Parts of Attachment 3 has been modified to only include relevant results/survey data for those areas located within/near USACE properties (i.e. Terrace Mountain)

Timber Rattlesnake Habitat Assessment and Presence/Absence Survey Report

Pennsylvania Pipeline Project

for

Tetra Tech, Inc. and Sunoco Pipeline, LP

PFBC SIR# 41856



Prepared By:

Wildlife Specialists, LLC

2785 Hills Creek Rd.

Wellsboro, PA 16901

570-376-2255

www.wildlife-specialists.com

August 2015



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Executive Summary

Wildlife Specialists, LLC conducted timber rattlesnake (*Crotalus horridus*) habitat assessments and presence/absence surveys on lands investigated by Sunoco Pipeline, LP for their proposed Pennsylvania Pipeline Project. Surveys were conducted in 19 survey areas from Laurel Ridge in the west to Wildcat Ridge in the east. Potential timber rattlesnake critical habitat was delineated in all 19 survey areas. Presence/absence surveys of both denning and gestation critical habitats were conducted. Qualified timber rattlesnake surveyors Stan J. Boder, Christopher S. Camacho, and Philip R. Dunning, with assistance from biologists from Wildlife Specialists, LLC, conducted the surveys from May 2014 to July 2015. Of 8 confirmed denning critical habitats, 5 were within the limits of disturbance of the proposed project and resulted in reroutes of the project. Of 15 confirmed gestation critical habitats, 5 were within the limits of disturbance of the project and will be rebuilt following construction. Timber rattlesnake observations were made in 16 of 19 survey areas. Wildlife Specialists, LLC recommends that timber rattlesnake construction monitors be present during construction in each survey area where timber rattlesnakes were observed over the course of the surveys.

Introduction

Sunoco Pipeline, LP (Sunoco) is in the planning and routing stage for the proposed Pennsylvania Pipeline Project (the Project). Following a Pennsylvania Natural Diversity Inventory (PNDI) Large Project review (PFBC SIR#: 41856, Dated January 27, 2014 and May 21, 2014; App. I), the Pennsylvania Fish and Boat Commission (PFBC) identified a potential impact from this Project on the timber rattlesnake (*Crotalus horridus*), a PA *Candidate* species. On behalf of Sunoco, Tetra Tech, Inc. (Tetra Tech) contracted Wildlife Specialists, LLC (Wildlife Specialists) to conduct a timber rattlesnake habitat assessment within 18 areas of the proposed Project route identified by PFBC as having potential to provide timber rattlesnake critical habitat (denning or gestation). Two areas identified by PFBC as requiring timber rattlesnake surveys were removed from the Project due to reroutes (South of Gallitzen and West of Altoona), and half of another survey area was also removed (Lock Mountain). Wildlife Specialists added survey areas to the reroute areas to expedite the review process (Altoona Bypass 1, Altoona Bypass 2, and Lock Mountain 2). The PFBC Blacklog Mountain, Shade Mountain survey area was split into two sections in this report for ease of reporting. Where critical habitat was identified, Wildlife Specialists subsequently conducted presence/absence surveys of timber rattlesnake occurrence. The results of both the habitat assessments and presence/absence surveys are contained herein.

Site and Project Description

The proposed Pennsylvania Pipeline Project is a natural gas pipeline of approximately 350 miles with origins in West Virginia, Ohio, and Pennsylvania which terminates at the Marcus Hook Industrial Complex in Delaware County, Pennsylvania. Timber rattlesnake survey areas (Survey Areas) associated with the Project were located in mountainous areas of Indiana, Cambria, Blair, Huntingdon, Juniata, Perry, and Cumberland Counties, crossing through the Allegheny Mountain and Allegheny Front Sections of the Appalachian Plateaus Physiographic Province and the Appalachian Mountain Section of the Ridge and Valley Physiographic Province (Table 1; Figs. 1 & 2). Underlying geology of the timber rattlesnake survey areas was comprised primarily of the Juniata Formation, Bald Eagle Formation, Tuscarora Formation, and Clinton Group in the eastern survey areas and of the Mauch Chunk Formation, Pottsville Formation, Allegheny Formation, and Burgoon Sandstone in the western survey areas. Major forest types were Appalachian Oak Forest and Northern Hardwood Forest.

Survey Areas were 1000ft. corridors centered on the proposed pipeline route and containing approximately 5,500 acres of state game lands, state forest lands, and private lands. The proposed pipeline route follows existing rights-of-way over much of the Survey Areas. There were several route changes during the course of the surveys that resulted in several Survey Areas along the original route to not be surveyed and in the addition of several new Survey Areas. More detailed descriptions of individual Survey Areas are included in the Results section of this report.

Table 1. Summary of timber rattlesnake survey areas along Sunoco’s proposed Pennsylvania Pipeline Project, including those identified in the Pennsylvania Fish and Boat Commission’s Large Project Environmental Review response letters and those added due to route changes.

Survey Area ID	County	Physiographic Province ^a
Laurel Ridge	Indiana/Cambria	AMAP
Laurel Ridge South Exposure	Cambria	AMAP
Altoona Bypass 1	Blair/Cambria	AMAP/APRV
Altoona Bypass 2	Blair	APRV
Lock Mountain 1	Blair	APRV
Lock Mountain 2	Blair	APRV
Tussey Mountain	Blair/Huntingdon	APRV
Terrace Mountain	Huntingdon	APRV
Sideling, Jacks Mountain	Huntingdon	APRV
Jacks Mountain, SGL 71	Huntingdon	APRV
Blacklog Mountain, Shade Mountain	Huntingdon	APRV
Tuscarora Mountain	Juniata/Perry	APRV
Conococheague Mountain	Perry	APRV
Conococheague Mountain, TSF ^b	Perry	APRV
Schultz Bowers Mountain	Perry	APRV
Bowers Mountain, TSF	Perry	APRV
Blue Mountain West	Perry	APRV
Blue Mountain East	Cumberland	APRV/GVRV
Wildcat Ridge, TSF	Cumberland	APRV/GVRV

^a AMAP = Allegheny Mountain Section of Appalachian Plateau Physiographic Province

GVRV = Great Valley Section of Ridge and Valley Physiographic Province

APRV = Appalachian Mountain Section of Ridge and Valley Physiographic Province

^bTSF = Tuscarora State Forest

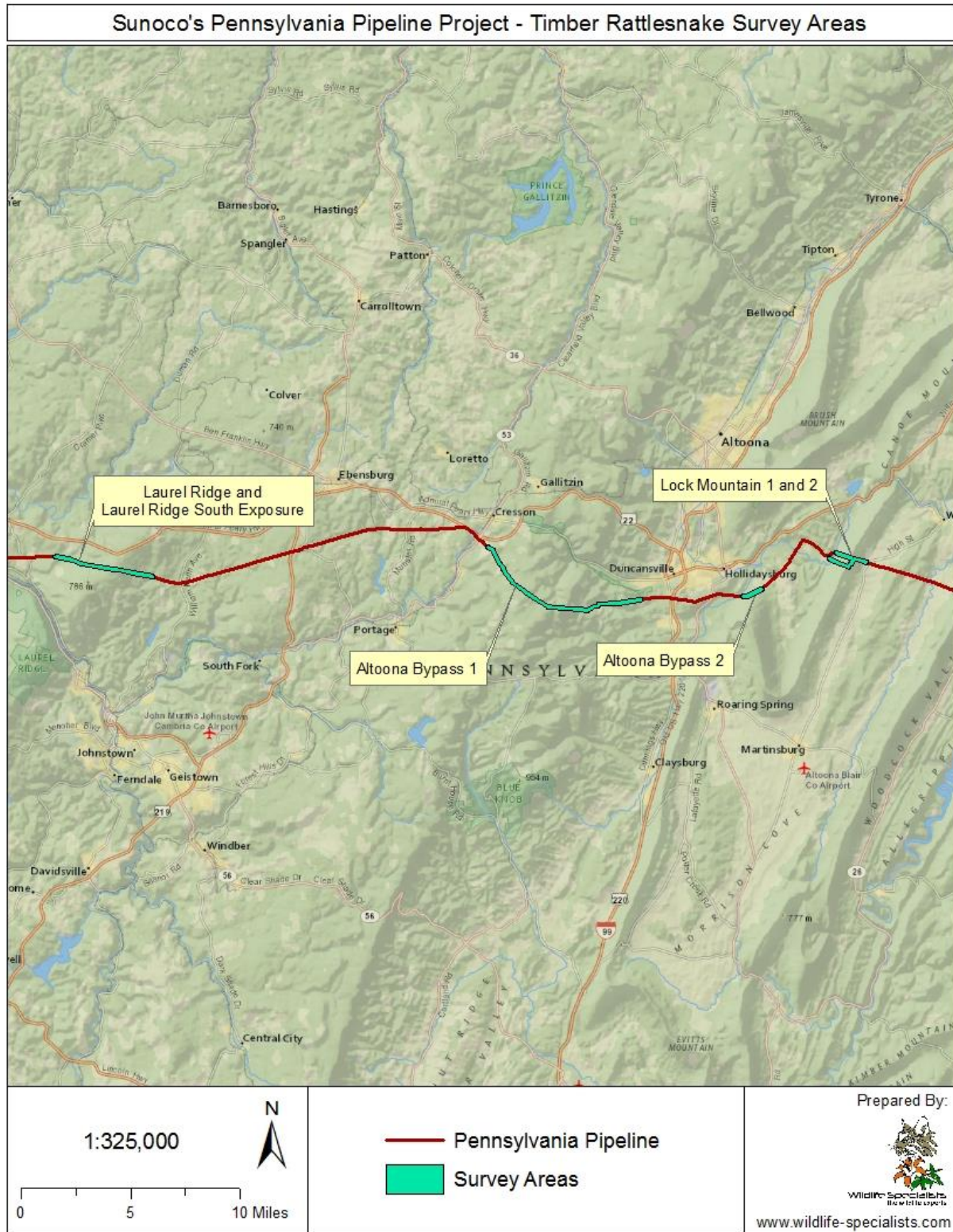


Figure 1. Timber rattlesnake survey areas along Sunoco's proposed Pennsylvania Pipeline Project, Indiana, Cambria, and Blair Counties, Pennsylvania.

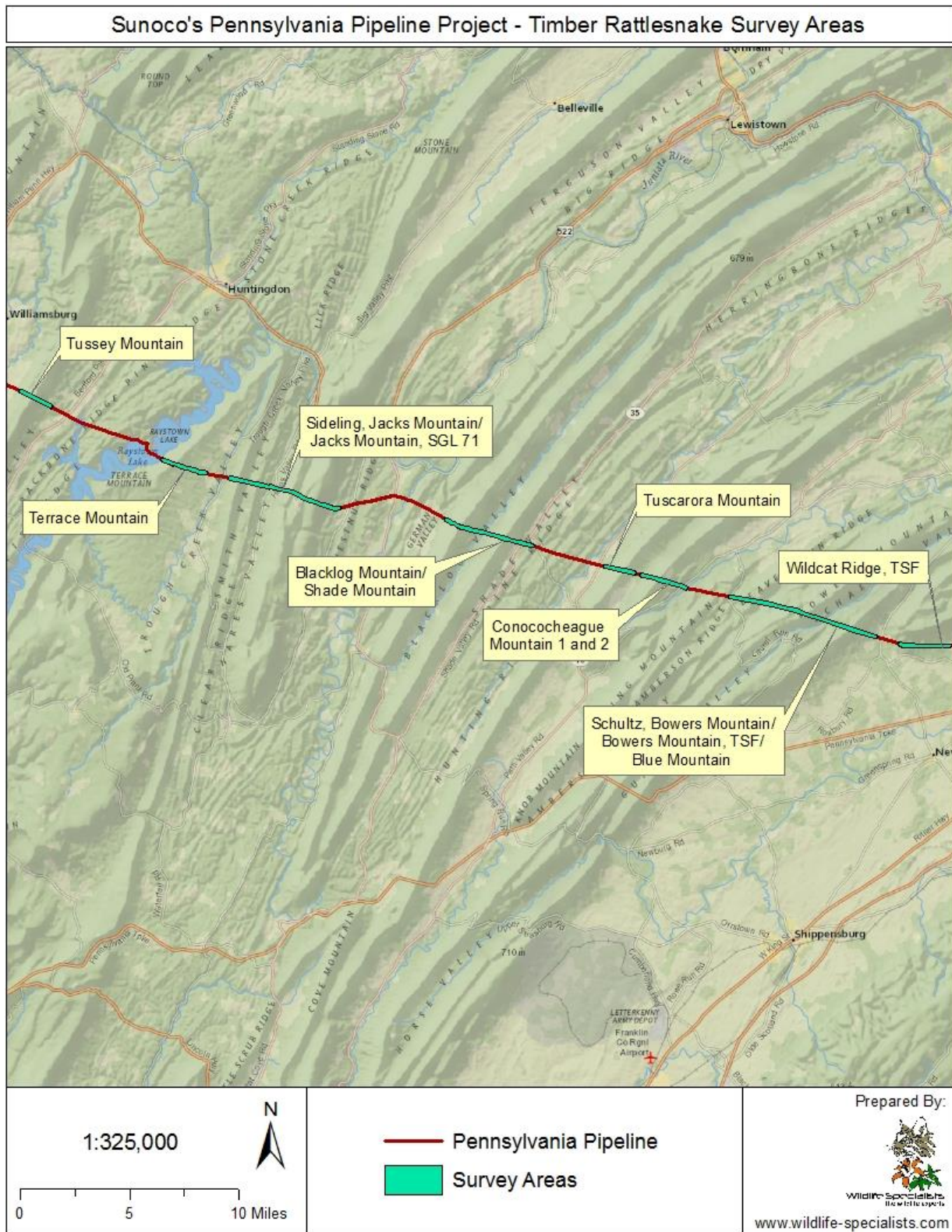


Figure 2. Timber rattlesnake survey areas along Sunoco's proposed Pennsylvania Pipeline Project, Blair, Huntingdon, Juniata, Perry, and Cumberland Counties, Pennsylvania.

Survey Methods

Habitat Assessment – Timber rattlesnake habitat assessment protocols were based on PFBC guidelines, revised May 2014. Timber rattlesnake critical habitat within 500ft. of the Project centerline was evaluated and classified as potential gestation and/or denning habitat. Any areas of potential habitat were documented using handheld GPS units and geo-referenced digital photographs. GIS maps were generated to illustrate search areas, proposed development, digital photo locations and significant findings. Detailed information on site characteristics was recorded on PFBC data forms (App. II).

Presence/Absence Surveys – Standard timber rattlesnake presence/absence survey protocols were based on PFBC guidelines, which were updated in February 2015. For denning habitat surveys, at least four independent site surveys on non-consecutive days are required. In 2014, surveys were permitted between 15 April and 31 May. In 2015, the guidelines were changed to permit surveys only between 15 April and 15 May. For gestation habitat surveys, at least four site surveys (each separated by at least one week) are required between 1 June and 15 September. Weather conditions and habitat parameters were recorded during all survey efforts. These data included cloud cover, air and ground temperatures, relative humidity, and wind speed. Field surveys were only conducted during favorable weather conditions, i.e. shaded air temperatures of at least 65°F (18.3°C) and sun-exposed ground temperatures of at least 75°F (23.9°C). Surveys were not conducted during rain events. We recorded basic information on all timber rattlesnakes observed, micro and macro habitat, and other herpetofauna observed.

PFBC qualified timber rattlesnake surveyors Stan J. Boder, Christopher S. Camacho, and Philip R. Dunning led the surveys and were assisted by biologists from Wildlife Specialists with timber rattlesnake survey experience. Typically, 2 to 4 rattlesnake surveyors were surveying during each survey day/event that took place.

Results

Habitat assessments and presence/absence surveys were completed from May 2014 to July 2015. Results specific to each survey area are presented in separate sections below. Potential timber rattlesnake critical habitat was delineated in each survey area. The presence of critical habitat was confirmed in 8 survey areas. A total of 8 denning habitats were confirmed as critical habitat, and 15 gestation habitats were confirmed as critical habitat (Table 2). Two-hundred and eighty-two timber rattlesnake observations were made across 16 of 19 survey areas. Of 8 confirmed denning habitats, 5 were within the limits of disturbance (LOD) of the proposed Project and resulted in reroutes. Two denning habitats in the Altoona Bypass 1 survey area were avoided by one reroute which passed 25ft. north of the habitats. The reroute on Shade Mountain passes a minimum of 15ft. south of the confirmed denning habitat there. In the Shultz, Bowers Mountain survey area the reroute passes a minimum of 15ft. southwest of the confirmed denning habitat. The final reroute in the Bowers

Mountain, Tuscarora State Forest survey area also passes 15ft. southwest of the confirmed denning habitat, though additional temporary workspace extends to the boundary of the delineated habitat. Of 15 confirmed gestation habitats, 6 are within the LOD of the proposed Project: 1 in the Altoona Bypass 1 survey area, 1 in the Jacks Mountain SGL 71 survey area, 2 in the Bowers Mountain Tuscarora State Forest survey area, 1 in the Blue Mountain West survey area, and 1 in the Blue Mountain East survey area.

Table 2. Number of confirmed timber rattlesnake critical habitats and total timber rattlesnake observations per survey area of the Pennsylvania Pipeline Project.

Survey Area	Denning Habitats Confirmed	Gestation Habitats Confirmed	Timber Rattlesnake Observations
Laurel Ridge	1	1	82
Laurel Ridge South Exposure	0	0	0
Altoona Bypass 1	2	3	29
Altoona Bypass 2	0	0	3
Lock Mountain 1	0	0	0
Lock Mountain 2	0	0	0
Tussey Mountain	0	0	2
Terrace Mountain	0	0	1
Sideling, Jacks Mountain	0	0	4
Jacks Mountain, SGL 71	0	2	23
Blacklog, Shade Mountain	1	2	54
Tuscarora Mountain	0	0	2
Conococheague Mountain 2	0	0	4
Conococheague Mountain 1, TSF ^b	0	0	12
Schultz, Bowers Mountain	1	2	41
Bowers Mountain, TSF	2	3	11
Blue Mountain West	0	1	9
Blue Mountain East	1	1	4
Wildcat Ridge, TSF	0	0	1
TOTAL	8	15	282

Laurel Ridge

Survey Area Description- The Laurel Ridge survey area is an approximately 351 acre (142 ha) area extending from Griffith Rd. (T883) in East Wheatfield Township, Indiana County 2.75 miles eastward to Dishong Mtn. Rd. (SR3041) in Jackson Township, Cambria County with central coordinates of 40°25'38.1"N, 78°56'48.5"W. The area falls on the gradual northwest slope of Laurel Ridge with an elevation range from 1570ft. to 2430ft. Gallitzen State Forest land enters the survey area from the south. Private lands are located on the eastern and western sides. Mature red oak-mixed hardwood forest is the predominant forest type. Chestnut oak dominates on drier sites. Hemlock-red oak-mixed

hardwood forest is dominant along Findley Run, which crosses the survey area towards its western end. Agricultural fields enter the survey area west of Findley Run. An existing pipeline right-of-way bisects the length of the survey area and a powerline right-of-way crosses towards the middle.

Phase I Habitat Assessment- The habitat assessment was completed on 25 June 2014. Eight potential denning habitat polygons and 8 potential gestation habitat polygons were delineated (Fig. 3). Nine incidental timber rattlesnake observations were made during the habitat assessment (Table 4).

Denning Habitat- Potential denning habitats totaled 20.0 acres (App. II for PFBC data sheets). One habitat area was a southeast-facing ledge on the north side of Findley Run. It was a low, well-defined ledge in mature mixed-hardwood forest composed primarily of red maple (*Acer rubrum*), black cherry (*Prunus serotina*), and black birch (*Betula lenta*), with some hemlock (*Tsuga canadensis*). Some rhododendron (*Rhododendron* spp.) was present. Not much rock was found below the edge except for scattered thin (<6in) slabs and some larger, embedded rocks. Small pockets of mossy boulders provided potential denning habitat low on the slope to the southeast of Findley Run. These areas were in closed-canopy forest, but were moderately steep (~30°) slopes with concentrations of moderately-sized (~2m) boulders. Large contiguous patches of potential denning habitat existed further upslope and were associated with a line of large, house-sized boulders. Ledges formed by these boulders contained crevices extending back into the hillside. In a few areas there were concentrations of smaller rock in slides where much of the rock was embedded in the hillside but showed obvious crevices. Greenbriar (*Smilax rotundifolia*) and mountain laurel (*Kalmia latifolia*) were prevalent around these habitats. Chestnut oak (*Quercus montana*) dominated the overstory and black birch was prevalent in the understory. Several scattered canopy openings were present, especially on top of the larger rocks.

Gestation Habitat- Potential gestation areas were primarily associated with rocks in and along the existing gas line and powerline rights-of-way. The highest quality gestation habitat was found on the powerline right-of-way where there was a large swath of near-continuous rocky habitat bordered on all sides by a dense growth of greenbriar. Rocks were mostly flat slabs less than 2m in length, either piled or resting on leaf litter. Scattered black birch and other saplings provided some patches of shade. Rattlesnakes observed during the habitat assessment were seen in this area. Other potential gestation areas were open areas on top of large boulders with open canopy, where there was some cover in the form of black huckleberry (*Gaylussacia baccata*) and occasional cap rocks.

Phase II Presence/Absence Survey- One denning habitat and 1 gestation habitat were confirmed during spring and summer of 2015 (Fig. 3). Neither habitat was located within the LOD of the proposed Project. A total of 82 timber rattlesnake observations were made over the course of both surveys (Table 4). Thirteen species of other herpetofauna were also observed (Table 5). Denning surveys totaled 48.7 man-hours of survey time, and gestation surveys totaled 27.0 man-hours.

Denning Survey- The confirmed den was a northwest-facing slope approximately 125ft. south of the powerline right-of-way which crossed the survey area. The earliest rattlesnake observation in this area

was on 29 April 2015, when a snake was heard rattling under a mossy, partially embedded rock. This location was on an approximate 20% slope near the western side of a ~200ft. stretch of forested rock slide. Rocks in the slide were mostly flat and variously sized, from car-sized boulders to <1m fragments. Much of the rock was embedded in the bank and partially covered by leaf litter and moss. The top side of this slope, to the southeast, had dense mountain laurel that gave way to a nearly flat, open area with patches of exposed bedrock and various large basking rocks amongst a covering of black huckleberry. Below the slope, to the north and northwest, a gently-sloped hillside with scattered patches of rock transitioned to the powerline right-of-way. Later rattlesnake observations were concentrated in basking areas surrounding the slope where the snake was observed on 29 April. By the final denning survey on 12 May, rattlesnake observations were made at greater distances from the confirmed den, including a foraging male approximately 3,500ft. to the northwest. Twenty-three timber rattlesnake observations were made over the course of the denning presence/absence surveys (Table 4).

Gestation Survey- Gestation habitat was confirmed on a 1.6 acre section of the powerline right-of-way near the confirmed denning habitat. Gravid snakes were first observed here during the denning presence/absence survey on 4 May and continued to be observed throughout the gestation surveys. Up to 7 gravid timber rattlesnakes were observed during any one survey. Pre-shed, juvenile, and non-gravid timber rattlesnakes were also observed in several areas during the surveys (Table 4). Gravid females at the confirmed gestation habitat were observed at several rocks along the powerline right-of-way, mostly towards the northern side. Occupied rock slabs were approximately 1.5m in width and 8in. thick and were in openings bordered by greenbriar and black birch saplings.

Tables, Figures, and Photos

Table 3. Weather conditions for the timber rattlesnake presence/absence surveys of potential denning and gestation habitat at the Laurel Ridge survey area along Sunoco’s proposed Pennsylvania Pipeline Project, Indiana and Cambria Counties, Pennsylvania.

Date	Start						Stop					
	Time (24hr)	Air Temp (°F)	Ground Temp (°F)	Relative Humidity (%)	Avg. Wind Speed (mph)	Cloud Cover (%)	Time (24hr)	Air Temp (°F)	Ground Temp (°F)	Relative Humidity (%)	Avg. Wind speed (mph)	Cloud Cover (%)
4/29/15	1114	67.2	85.0	38.7	1.1	15	1625	71.6	76.1	34.2	1.4	50
5/4/15	1000	76.0	92.0	23.0	0.5	10	1610	81.0	83.6	34.0	2.0	25
5/7/15	1035	70.0	91.0	60.0	1.5	0	1520	82.0	87.7	28.2	1.4	10
5/12/15	0955	66.2	75.0	64.2	1.0	90	1350	71.0	75.4	50.1	1.9	85
6/4/15	1440	67.8	75.8	71.3	1.9	95	1645	69.7	80.2	59.3	1.0	30
6/11/15	1130	82.0	90.5	64.7	0.0	80	1441	85.6	96.3	55.1	0.3	60
7/2/15	0950	67.7	82.3	82.4	0.6	30	1330	71.9	82.3	66.0	0.0	100
7/10/15	1130	71.6	77.2	79.5	0.8	100	1603	73.0	77.2	82.3	0.0	100

Table 4. Timber rattlesnake observation data at the Laurel Ridge survey area along Sunoco’s Pennsylvania Pipeline Project, Indiana and Cambria Counties, Pennsylvania.

Date	Observation ID	Latitude (Decimal Degrees, NAD83)	Longitude (Decimal Degrees, NAD83)	Estimated Length (in.)	Sex	Color Phase	Gravid?
6/25/14	TR01	40.42689	-78.94556	23	Unknown	Yellow	N/A
6/25/14	TR02	40.42691	-78.94606	50	Male	Yellow	N/A
6/25/14	TR03	40.42688	-78.94668	24	Unknown	Black	N/A
6/25/14	TR04	40.42681	-78.94822	28	Unknown	Black	N/A
6/25/14	TR05	40.42685	-78.94852	38	Female	Black	Yes
6/25/14	TR06	40.42685	-78.94852	37	Female	Black	Yes
6/25/14	TR07	40.42685	-78.94852	39	Female	Yellow	Yes
6/25/14	TR08	40.42685	-78.94852	38	Female	Yellow	Yes
6/25/14	TR09	40.42669	-78.94936	36	Female	Black	Yes
4/29/15	TR10	40.42626	-78.94794	Unknown	Unknown	Unknown	Unknown
5/4/15	TR11	40.42672	-78.94859	38	Unknown	Black	Unknown
5/4/15	TR12	40.42684	-78.94852	40	Unknown	Black	Unknown
5/4/15	TR13	40.42684	-78.94852	Unknown	Unknown	Unknown	Unknown
5/4/15	TR14	40.42629	-78.94769	53	Male	Yellow	N/A
5/7/15	TR15	40.42671	-78.94928	36	Unknown	Yellow	Unknown
5/7/15	TR16	40.42682	-78.94852	34	Female	Yellow	Unknown
5/7/15	TR17	40.42682	-78.94852	30	Unknown	Yellow	No
5/7/15	TR18	40.42682	-78.94852	34	Unknown	Black	Unknown
5/7/15	TR19	40.42682	-78.94852	34	Unknown	Black	Unknown
5/7/15	TR20	40.42682	-78.94852	34	Unknown	Black	Unknown
5/7/15	TR21	40.42685	-78.94826	Unknown	Unknown	Unknown	Unknown
5/7/15	TR22	40.42678	-78.94797	34	Female	Black	Yes
5/7/15	TR23	40.42678	-78.94797	Unknown	Unknown	Unknown	Unknown
5/7/15	TR24	40.42593	-78.94749	16	Unknown	Black	N/A
5/7/15	TR25	40.42590	-78.94757	43	Male	Black	N/A
5/12/15	TR26	40.43054	-78.95934	43	Male	Yellow	N/A
5/12/15	TR27	40.42664	-78.94891	34	Female	Black	Yes
5/12/15	TR28	40.42670	-78.94886	34	Unknown	Yellow	Unknown
5/12/15	TR29	40.42690	-78.94847	34	Female	Black	Yes
5/12/15	TR30	40.42690	-78.94847	34	Female	Black	Yes
5/12/15	TR31	40.42690	-78.94847	36	Female	Black	Yes

5/12/15	TR32	40.42690	-78.94847	36	Female	Yellow	Yes
5/12/15	TR33	40.42701	-78.94573	18	Unknown	Yellow	N/A
5/12/15	TR34	40.42701	-78.94573	12	Unknown	Yellow	N/A
5/12/15	TR35	40.42832	-78.94727	22	Unknown	Black	N/A
6/4/15	TR36	40.42959	-78.95385	46	Male	Black	N/A
6/4/15	TR37	40.42693	-78.94785	30	Female	Black	Yes
6/4/15	TR38	40.42689	-78.94797	30	Female	Black	No
6/4/15	TR39	40.42685	-78.94798	38	Female	Black	Yes
6/4/15	TR40	40.42685	-78.94798	38	Female	Black	Yes
6/4/15	TR41	40.42692	-78.94828	18	Unknown	Black	N/A
6/4/15	TR42	40.42692	-78.94828	36	Female	Yellow	Yes
6/4/15	TR43	40.42691	-78.94840	35	Female	Black	Yes
6/4/15	TR44	40.42691	-78.94840	35	Female	Black	Yes
6/4/15	TR45	40.42691	-78.94840	38	Female	Black	Yes
6/4/15	TR46	40.42691	-78.94840	39	Female	Black	Yes
6/4/15	TR47	40.42691	-78.94840	38	Female	Yellow	Yes
6/4/15	TR48	40.42717	-78.94486	34	Unknown	Black	Unknown
6/4/15	TR49	40.42853	-78.94750	42	Male	Yellow	N/A
6/4/15	TR50	40.42853	-78.94750	34	Female	Black	No
6/4/15	TR51	40.42772	-78.94880	28	Female	Yellow	No
6/11/15	TR52	40.42862	-78.95164	43	Male	Black	N/A
6/11/15	TR53	40.42682	-78.94817	25	Unknown	Black	N/A
7/2/15	TR54	40.42699	-78.94501	24	Unknown	Yellow	N/A
7/2/15	TR55	40.42688	-78.94696	Unknown	Unknown	Unknown	N/A
7/2/15	TR56	40.42678	-78.94796	36	Female	Black	Yes
7/2/15	TR57	40.42678	-78.94796	33	Female	Black	Yes
7/2/15	TR58	40.42682	-78.94808	35	Unknown	Black	Unknown
7/2/15	TR59	40.42682	-78.94808	36	Unknown	Yellow	Unknown
7/2/15	TR60	40.42679	-78.94849	34	Unknown	Black	Unknown
7/2/15	TR61	40.42671	-78.94885	Unknown	Unknown	Unknown	N/A
7/2/15	TR62	40.42673	-78.94886	36	Female	Yellow	Yes
7/2/15	TR63	40.42673	-78.94886	36	Female	Black	Yes
7/2/15	TR64	40.42673	-78.94886	36	Female	Black	Yes
7/2/15	TR65	40.42673	-78.94886	36	Female	Black	Yes

7/2/15	TR66	40.42675	-78.94923	36	Female	Yellow	Yes
7/2/15	TR67	40.42846	-78.94746	18	Unknown	Black	N/A
7/2/15	TR68	40.42843	-78.94760	24	Unknown	Black	N/A
7/10/15	TR69	40.42697	-78.94493	24	Unknown	Yellow	N/A
7/10/15	TR70	40.42678	-78.94796	36	Female	Black	Yes
7/10/15	TR71	40.42678	-78.94796	33	Female	Black	Yes
7/10/15	TR72	40.42685	-78.94794	Unknown	Unknown	Unknown	Unknown
7/10/15	TR73	40.42676	-78.94866	23	Unknown	Black	N/A
7/10/15	TR74	40.42673	-78.94886	36	Female	Yellow	Yes
7/10/15	TR75	40.42673	-78.94886	36	Female	Black	Yes
7/10/15	TR76	40.42673	-78.94886	36	Female	Black	Yes
7/10/15	TR77	40.42673	-78.94886	36	Female	Black	Yes
7/10/15	TR78	40.42673	-78.94886	36	Female	Black	Yes
7/10/15	TR79	40.42669	-78.94917	36	Female	Yellow	Yes
7/10/15	TR80	40.42846	-78.94746	18	Unknown	Black	N/A
7/10/15	TR81	40.42843	-78.94760	24	Unknown	Black	N/A
7/10/15	TR82	40.42843	-78.94760	28	Unknown	Black	N/A

Table 5. Other herpetofauna observed in the Laurel Ridge survey area along the proposed Pennsylvania Pipeline Project, Indiana and Cambria Counties, Pennsylvania.

Herpetofauna Species Observed (Common Name / Scientific Name)	Number
Eastern Long-tailed Salamander / <i>Eurycea l. longicauda</i>	1
Allegheny Mountain Dusky Salamander / <i>Desmognathus ochrophaeus</i>	1
Red-spotted Newt / <i>Notophthalmus v. viridescens</i>	3
Northern Slimy Salamander / <i>Plethodon glutinosus</i>	2
Eastern American Toad / <i>Anaxyrus a. americanus</i>	7
Green Frog / <i>Lithobates clamitans</i>	7
Wood Frog / <i>Lithobates sylvaticus</i>	2
Northern Black Racer / <i>Coluber c. constrictor</i>	1
Eastern Milksnake / <i>Lampropeltis t. triangulum</i>	1
Northern Watersnake / <i>Nerodia s. sipedon</i>	1
Eastern Ratsnake / <i>Pantherophis alleghaniensis</i>	3
Northern Red-bellied Snake / <i>Storeria o. occipitomaculata</i>	1
Eastern Gartersnake / <i>Thamnophis s. sirtalis</i>	20



Photo 13. Potential denning habitat

Timber Rattlesnake Photos-



Photo 1. TR01



Photo 2. TR02

Terrace Mountain

Survey Area Description- The Terrace Mountain survey area is a 269 ac (109 ha) area located on the southeast and steep northwest facing sides of Terrace Mountain in Penn and Union Townships, Huntingdon County (Fig. 14). The survey corridor extends from just east of Happy Hills Road at its eastern terminus to Raystown Lake at its western terminus. Central coordinates for the survey area are 40°21'49.3"N, 78°2'48.5"W. Elevations within the site range from approximately 700ft. to 1,800ft. The eastern end of the survey area is bordered to the south by John Bum Rd. and several homes. One home and one camp are located within the survey area near the top of the mountain. The length of the survey area is bisected by an existing gas line right-of-way. Dry oak-heath forest dominates, with a strong black birch component in the understory.

Phase I Habitat Assessment- The habitat assessment was completed on 24 June 2014. Two potential

denning habitats and 10 potential gestation habitats were delineated. All potential timber rattlesnake critical habitat was identified on the southeast-facing slope of the mountain.

Denning Habitat- Potential denning habitat totaled approximately 6.2 acres. Habitats were located on either side of the existing pipeline right-of-way just above the 1700ft. elevation contour. On the south side of the right-of-way was a recently clear-cut area dominated by blackberry, black birch saplings, mountain laurel, and black huckleberry with a vein of rock providing potential denning habitat on a 10° southeast-facing slope. Rocks were less than 2m in length, flat, and were partially embedded with crevices beneath. On the north side of the right-of-way was a rocky area in an area of pole-sized black birch forest. The slope in this area was <10° and southeast-facing. Rock was associated with a small, low outcrop. Embedded rocks 2m wide and 0.5m tall were fragmented and surrounded by smaller rocks, providing numerous crevices.

Gestation Habitat- Potential gestation habitat was primarily located along the existing gas line right-of-way. Small piles of 1m-diameter or greater rocks in a berm along the northern edge of the right-of-way provided excellent thermal habitat, especially as the forest edge did not encroach on the rocks. A 2m wide by 12in. thick rock with space underneath also provided potential gestation habitat in a clearing above the northern potential denning habitat. An area within the southern potential denning habitat also provided potential gestation habitat. Sweet fern (*Comptonia peregrina*), broomsedge, hay-scented fern, and blackberry were the dominant flora along the right-of-way and in other open areas.

Phase II Presence/Absence Survey- No denning or gestation habitats were confirmed during the presence/absence surveys. Denning surveys totaled 10.9 man-hours. Gestation surveys totaled 16.0 man-hours (Table 21). One timber rattlesnake observation was made during the gestation surveys, a 38in. male was observed under a rock just west of the potential gestation habitats (Table 22).

Tables, Figures, and Photos

Table 21. Weather conditions for the timber rattlesnake presence/absence surveys of potential denning and gestation habitat at the Terrace Mountain survey area along Sunoco’s proposed Pennsylvania Pipeline Project, Huntingdon County, Pennsylvania.

Date	Start						Stop					
	Time (24hr)	Air Temp (°F)	Ground Temp (°F)	Relative Humidity (%)	Avg. Wind Speed (mph)	Cloud Cover (%)	Time (24hr)	Air Temp (°F)	Ground Temp (°F)	Relative Humidity (%)	Avg. Wind speed (mph)	Cloud Cover (%)
4/15/15	1155	68.0	79.2	15.6	1.1	100	1343	66.7	75.8	20.9	1.6	100
5/2/15	1446	74.4	76.3	25.9	1.1	60	1515	71.1	75.0	28.3	2.4	80
5/6/15	1045	65.3	75.7	76.1	2.3	30	1130	69.0	83.7	71.6	1.5	20
5/9/15	0902	67.8	77.2	67.4	2.7	0	0938	73.1	79.9	58.1	2.0	0
6/1/15	1040	68.0	73.5	88.7	1.7	100	1300	70.1	79.2	75.1	1.4	75

6/8/15	0939	70.0	82.5	76.6	4.7	75	1100	78.8	89.5	69.7	2.9	50
6/15/15	1819	80.5	86.5	80.2	1.7	100	1902	75.6	86.5	80.2	1.7	100
6/22/15	0930	71.5	82.5	77.9	2.7	50	1040	74.3	86.7	73.7	2.7	25

Table 22. Timber rattlesnake observation data for the denning and gestation habitat presence/absence surveys at the Terrace Mountain survey area along Sunoco’s Pennsylvania Pipeline Project, Huntingdon County, Pennsylvania.

Date	Observation ID	Latitude (Decimal Degrees, NAD 83)	Longitude (Decimal Degrees, NAD 83)	Estimated Length (in.)	Sex	Color Phase	Gravid?
5/11/15	TR01	40.36589	-78.05488	38	Male	Yellow	N/A

Table 23. Other herpetofauna observed at the Terrace Mountain survey area along the proposed Pennsylvania Pipeline Project; Huntingdon County, Pennsylvania.

Herpetofauna Species Observed (Common Name / Scientific Name)	Number
Common Five-lined Skink / <i>Plestiodon fasciatus</i>	5
Eastern Ratsnake / <i>Pantherophis alleghaniensis</i>	5

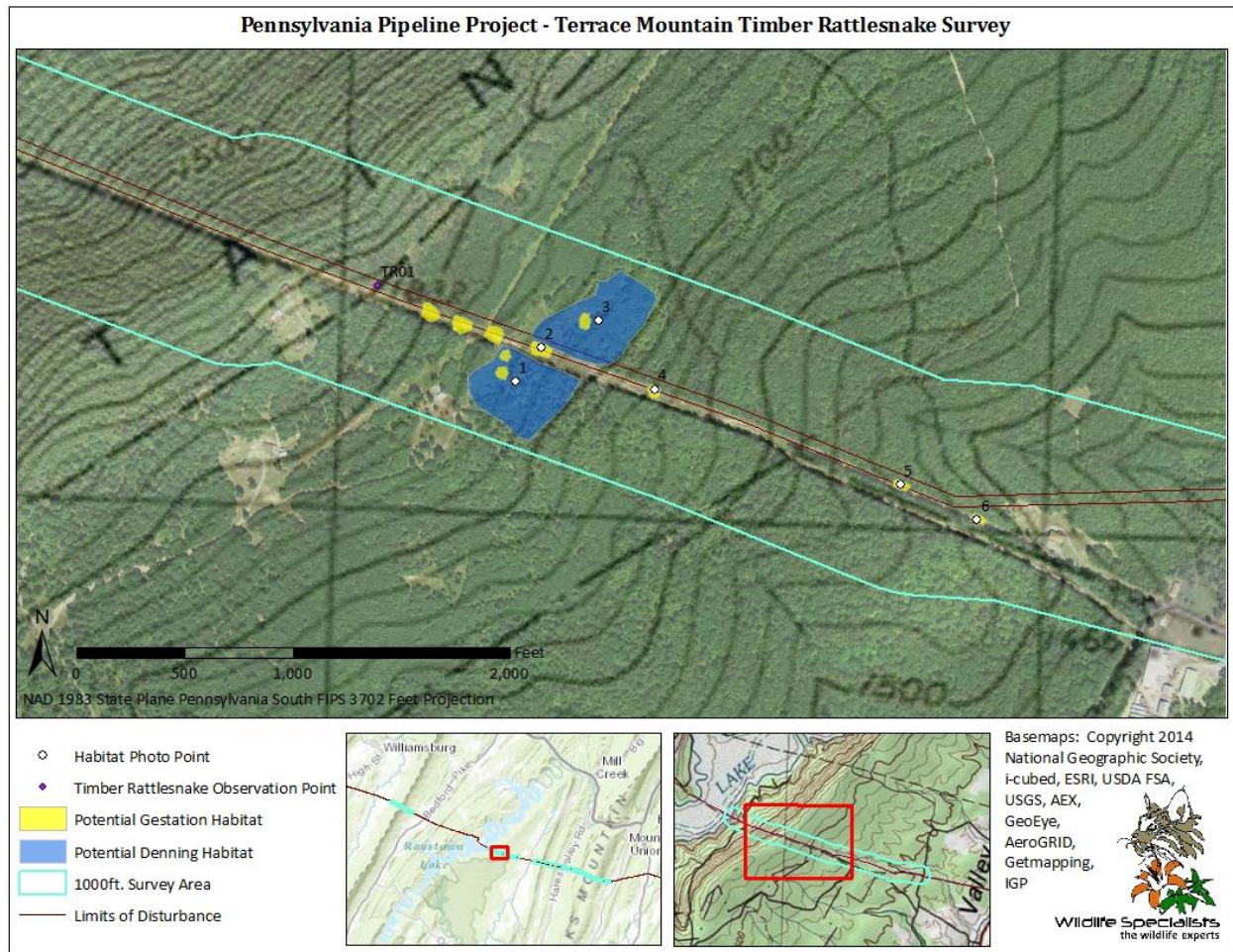


Figure 14.

Habitat Photos-



Photo 1a. Potential gestation habitat



Photo 1b. Potential gestation habitat



Photo 2a. Potential gestation habitat



Photo 2b. Potential gestation habitat



Photo 3. Potential denning habitat



Photo 4. Potential gestation habitat



Photo 5. Potential gestation habitat



Photo 6. Potential gestation habitat

Timber Rattlesnake Photos-



Photo 1. TR01

Other Herpetofauna Photos-



Photo 1. Common Five-lined Skink



Photo 2. Eastern Ratsnake

Conclusions and Recommendations

Timber rattlesnake observations were made in 16 of 19 survey areas: Laurel Ridge, Altoona Bypass 1, Altoona Bypass 2, Tussey Mountain, Terrace Mountain, Sideling and Jacks Mountain, Jacks Mountain SGL 71, Blacklog and Shade Mountain, Tuscarora Mountain, Conococheague Mountain 1, Conococheague Mountain 2, Shultz and Bowers Mountain, Bowers Mountain Tuscarora State Forest, Blue Mountain West, Blue Mountain East, and Wildcat Ridge. To address the presence of timber rattlesnakes in these areas, Wildlife Specialists recommends the following measures:

- 1) If construction activities take place in the survey areas listed above within the active season of the timber rattlesnake (15 April to 15 October), have a PFBC approved timber rattlesnake construction monitor on site in each active survey area when construction is taking place in order to move rattlesnakes out of harm's way and to ensure worker safety.
- 2) Inform site workers about the proximity to timber rattlesnakes, regulations addressing timber rattlesnake protection, and who to call to remove rattlesnakes that enter the construction zone.

The Project was rerouted around the 5 confirmed denning habitats which fell within the LOD of the original route of the proposed Project. As the reroutes adequately clear the boundaries of the confirmed habitats, no further action is recommended to minimize disturbance to these areas. Of the 15 confirmed gestation habitats, 6 fall within the LOD of the Project. Wildlife Specialists recommends reconstructing the disturbed gestation habitat according to PFBC guidelines for gestation habitat creation.

No timber rattlesnakes were observed within either Lock Mountain survey area. However, 25 northern copperhead observations were made within the Lock Mountain 2 survey area on the northwest-facing side of Lock Mountain. In addition, northern copperheads were commonly observed in several other survey areas. Wildlife Specialists recommends informing workers about the proximity to northern copperheads and regulations protecting northern copperheads from illegal take.

Appendix I. PA Fish & Boat Commission PNDI Letters



Pennsylvania Fish & Boat Commission

Division of Environmental Services
Natural Gas Section
450 Robinson Lane
Bellefonte, PA 16823

January 27, 2014

IN REPLY REFER TO
SIR# 41856

TETRA TECH
Preston Smith
661 Andersen Drive
Pittsburgh, Pennsylvania 15220

RE: **Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No.
Sunoco Mariner East 2 Pipeline**
ALLEGHENY County: - BERKS County: - BLAIR County: - CAMBRIA County: -
CHESTER County: - CUMBERLAND County: - DAUPHIN County: - DELAWARE
County: - HUNTINGDON County: - INDIANA County: - JUNIATA County: -
LANCASTER County: - LEBANON County: - PERRY County: - WASHINGTON
County: - WESTMORELAND County: - YORK County:

Dear Preston Smith:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search “potential conflict” or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

Timber Rattlesnake (*Crotalus horridus*, PA Candidate)

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.

Based on the review of this information and the proximity of the project to known critical habitat of the Timber Rattlesnake, we recommend completion of a **habitat assessment** to determine presence/absence of potential habitat at the proposed project areas:

Our Mission:

www.fish.state.pa.us

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

SIR # 41856

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January 27, 2014

County	Potential Conflict	Western End of Habitat Assessment		Eastern End of Habitat Assessment		Comment
		Latitude	Longitude	Latitude	Longitude	
Cambria	Timber Rattlesnake	40.423856	-78.918485	40.419370	-78.884942	Laurel Ridge South Exposure
Blair	Timber Rattlesnake	40.465277	-78.489083	40.464433	-78.444829	West of Altoona
Huntingdon	Timber Rattlesnake	40.348146	-77.953475	40.337198	-77.912710	Jacks Mountain, SGL 71
Huntingdon	Timber Rattlesnake	40.329852	-77.820093	40.312663	-77.745830	Blacklog Mountain, Shade Mountain
Perry	Timber Rattlesnake	40.289980	-77.635604	40.284410	-77.612818	Conococheague Mountain, Tuscarora State Forest
Perry	Timber Rattlesnake	40.266702	-77.508005	40.262470	-77.491688	Bowers Mountain, Tuscarora State Forest
Cumberland	Timber Rattlesnake	40.256799	-77.469902	40.251875	-77.448899	Blue Mountain
Cumberland	Timber Rattlesnake	40.246850	-77.428032	40.245663	-77.385058	Wildcat Ridge, Tuscarora State Forest

We have included a list of qualified surveyors and habitat assessment protocol for your convenience. This list is not an exhaustive list of qualified rattlesnake surveyors in Pennsylvania as there may be qualified surveyors who have not asked to be placed on this list. It is not mandatory that you use someone on this list.

Freshwater Mussels

The following rare freshwater mussel species are known from the vicinity of the project area:

County	Potential Conflict	Latitude	Longitude	Water Name
Huntingdon	Yellow Lampmussel (<i>Lampsilis cariosa</i>)	40.342806	-77.853210	Aughwick Creek
Huntingdon	Rainbow Mussel (<i>Villosa iris</i>)	40.342806	-77.853210	Aughwick Creek
Juniata	Rainbow Mussel (<i>Villosa iris</i>)	40.301386	-77.696168	Tuscarora Creek
Cumberland	Rainbow Mussel (<i>Villosa iris</i>)	40.239506	-77.176329	Conodoguinet Creek
Cumberland	Elktoe (<i>Alasmidonta marginata</i>)	40.239506	-77.176329	Conodoguinet Creek
Cumberland	Triangle Floater (<i>Alasmidonta undulata</i>)	40.239506	-77.176329	Conodoguinet Creek
Cumberland	Yellow Lampmussel (<i>Lampsilis cariosa</i>)	40.239506	-77.176329	Conodoguinet Creek

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January 27, 2014

Freshwater mussels are the most imperiled taxonomic group in North America. Nearly 20% of the species historically known to occur in the Commonwealth are now extirpated (locally extinct). Additionally 60% of Pennsylvania's remaining species are of conservation concern. We are concerned about direct and indirect (i.e., runoff) effects that the proposed project may have on the species of concern. The freshwater mussel 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. Therefore, **we recommend using directional boring** rather than open cutting for the Aughwick Creek, Tuscarora Creek, and Conodoguinet Creek crossings. 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 directional boring methodology is used, in-stream work is avoided, strict E&S control measures are maintained, and best management practices are employed, we do not foresee any significant adverse impacts from the proposed activity to the mussel species of special concern. The applicant should implement the following contingencies to prevent impacts to water quality from drilling/boring operations:

- Have a designated environmental inspector on site for the duration of the entire crossing operation
 - Stop the bore/drill immediately if anyone on site observes an Inadvertent Return.
 - Have a Vac Truck on site or on call (within three hours) to begin clean-up of the release in the stream channel to prevent downstream migration of drilling fluids
 - Notify PFBC Bureau of Law Enforcement Regional Office within 24 hours
- http://fishandboat.com/dir_regions.htm (NC 814-359-5250; NE 570-477-5717; NW 814-337-0444; SW 814-445-8974)

Additionally, any release of sediment to the stream should be reason to initiate contact with the PFBC Bureau of Law Enforcement to address these issues. Any unauthorized disturbance, unpermitted discharge, or release of sediment(s) that is determined to be a pollution event (generally described <http://www.fish.state.pa.us/fishpub/summary/reporting.html>) per the Pennsylvania Fish and Boat Code will be subject to the appropriate legal enforcement action.

If, however, the work will necessitate any direct (e.g. equipment intrusion) or indirect impacts (e.g. runoff) to Aughwick Creek, Tuscarora Creek, and Conodoguinet Creek, a mussel survey & relocation should be conducted to avoid potential impacts to these rare mussel species. It is recommended that a qualified malacologist complete a mussel survey to identify any mussel species present and determine their abundance. Additionally, if mussels are encountered it is recommended that the mussels in the area of direct impact be relocated to suitable habitat outside of the disturbance area.

A list of qualified malacologists and a Pennsylvania Fish & Boat Commission approved mussel survey protocol is enclosed for your convenience when arranging for a mussel survey. Prior to conducting a survey, qualified malacologist should submit a proposed survey and relocation plan to this office. Upon completion of the mussel survey and relocation, please send a copy of the final report to this office for further evaluation.

SIR # 41856

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January 27, 2014

Fish

The following rare or protected fish species are known from the vicinity of the project area:

County	Potential Conflict	Latitude	Longitude	Water Name
Washington / Allegheny	Ghost Shiner (<i>Notropis buchanani</i> , PA Endangered)	40.230011	-79.971321	Monongahela River
Cambria	Brook Stickleback (<i>Culaea inconstans</i> , PA Candidate)	40.449661	-78.605685	Little Conemaugh River

The fish species known from the project area are especially vulnerable to physical (dredging, substrate modification, etc.) and chemical (turbidity, pH, dissolved oxygen, temperature, heavy metals and organic contaminants) changes to their aquatic environment. Although the mobile adults of these protected fish species may be capable of moving from the project area, their spawning grounds (including eggs, fry, and immature fish) are vulnerable to burial, crushing by equipment, and siltation from in-stream construction projects. We are concerned about potential impacts to the fish, eggs and the hatching fry from any instream work.

Provided that directional boring is used for the Monongahela River and Little Conemaugh River crossings, in-stream work is avoided, strict E&S control measures are maintained, and best management practices are employed, we do not foresee any significant adverse impacts from the proposed activity to the fish species of special concern.

If, however, the Monongahela River work will necessitate any direct impacts such as instream work or open cut stream crossings, we will need more information to allow for a more thorough evaluation of potential adverse impacts from the proposed project. Items such as a detailed narrative accurately describing the crossing including possible instream work, sequence of activities, basic site plans and map, aerial maps of the general area, project alternatives, acreage to be impacted, general habitat descriptions or onsite color photographs (keyed to a site map) would expedite our review process. Pending the review of this information a survey for the species of concern may be warranted.

If, however, the Little Conemaugh River work will necessitate any direct impacts such as instream work or open cut stream crossings, we request that all in-stream activity be avoided from April 1 to June 15 in order to avoid adverse impacts during the spawning season for the Brook Stickleback. Likewise, all work should be done during low flow periods, and strict erosion and sedimentation control measures need to be employed. Provided that these recommendations are followed, as well as best management practices and an approved erosion and sedimentation control plan is maintained, then we do not anticipate the proposed activity to have any significant adverse impacts to the fish species of special concern.

Eastern Redbelly Turtle (*Pseudemys rubriventris*, PA Threatened)

The eastern redbelly turtle is one of Pennsylvania's largest native aquatic turtles. This turtle species is known to inhabit relatively large, deep streams, rivers, ponds, lakes, and marshes with permanent water and ample basking sites. Redbelly turtles are restricted to the southcentral and southeastern regions of the Commonwealth. The existence of this turtle species is threatened by habitat destruction, poor water quality and competition with aggressive non-native turtle species that share its range and habitat (e.g. red-eared slider).

If large, deep streams, rivers, ponds, lakes and wetlands with permanent water or the area within 300ft of these water features in Chester and Delaware counties are to be disturbed from the

SIR # 41856

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January 27, 2014

project activity, we request completion of a habitat assessment to determine presence/absence of potential redbelly turtle habitat and/or nesting habitat at the proposed project area.

A qualified biologist, who possesses the necessary Scientific Collector's Permit issued by the Pennsylvania Fish and Boat Commission, must conduct this habitat/nesting habitat assessment. A list of biologists recognized as qualified by the Pennsylvania Fish and Boat Commission to perform redbelly turtle surveys is enclosed. Following completion of the assessment, a report of the qualified redbelly turtle biologist's observations and conclusions must be submitted to this office for further review and consultation.

However, if permanent water wetlands, vernal pools, or water bodies or the area within 300ft of these water features in Chester and Delaware counties are not to be disturbed in any way by the proposed activity, and provided that best management practices are employed and strict erosion and sedimentation measures are maintained, I do not foresee any adverse impacts to the Eastern Redbelly Turtle from the proposed project.

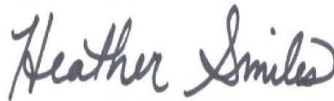
Bog Turtle (*Glyptemys muhlenbergii*, PA Endangered, Federal Threatened)

In an effort to streamline our threatened and endangered species environmental review process, reduce the redundancy in project reviews and ease our staff workload, the Pennsylvania Fish and Boat Commission has delegated coordination/consultation of joint state/federally listed species impact reviews to the PA Field Office of the U.S. Fish and Wildlife Service (USFWS). Please send your project materials *if you have not already done so* to them at: U.S. Fish and Wildlife Service, Endangered Species Section, 315 South Allen St, Suite 322, State College, PA 16801-4851.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Gary Smith at 814-279-3080 and refer to the SIR # 41856. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,



Heather A. Smiles, Chief
Natural Gas Section

HAS/GAS/dn



Pennsylvania Fish & Boat Commission

Division of Environmental Services

Natural Gas Section
450 Robinson Lane
Bellefonte, PA 16823

May 21, 2014

IN REPLY REFER TO

SIR# 41856 – Addition to January 27, 2014 letter

TETRA TECH
Preston Smith
661 Andersen Drive
Pittsburgh, Pennsylvania 15220

**RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No.**

Sunoco Pennsylvania Pipeline

**ALLEGHENY County: - BERKS County: - BLAIR County: - CAMBRIA County: -
CHESTER County: - CUMBERLAND County: - DAUPHIN County: - DELAWARE
County: - HUNTINGDON County: - INDIANA County: - JUNIATA County: -
LANCASTER County: - LEBANON County: - PERRY County: - WASHINGTON
County: - WESTMORELAND County: - YORK County:**

Dear Preston Smith:

Based on further review of the project, additional Timber Rattlesnake (*Crotalus horridus*) habitat besides those areas identified in our January 27, 2014 letter could be present within the proposed disturbance area. These are in addition to the search areas we previously provided and do not overlap any of the areas we previously recommended. We apologize for not bringing these additional Timber Rattlesnake habitat assessment areas to your attention in our earlier review; it was an omission on our part. Therefore, we recommend additional Timber Rattlesnake habitat assessment in the areas listed in Table 2 along with the areas listed in Table 1 from our January 27, 2014 letter to confirm whether or not the project site contains Timber Rattlesnake habitat and to determine the potential for adverse impacts to this species.

Our Mission:

www.fish.state.pa.us

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

SIR # 41856

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Table 1. Original Timber Rattlesnake Habitat Assessments Areas on the Pennsylvania Pipeline as listed in our January 27, 2014 letter.

County	Potential Conflict	Western End of Habitat Assessment		Eastern End of Habitat Assessment		Comment
		Latitude	Longitude	Latitude	Longitude	
Cambria	Timber Rattlesnake	40.423856	-78.918485	40.419370	-78.884942	Laurel Ridge South Exposure
Blair	Timber Rattlesnake	40.465277	-78.489083	40.464433	-78.444829	West of Altoona
Huntingdon	Timber Rattlesnake	40.348146	-77.953475	40.337198	-77.912710	Jacks Mountain, SGL 71
Huntingdon	Timber Rattlesnake	40.329852	-77.820093	40.312663	-77.745830	Blacklog Mountain, Shade Mountain
Perry	Timber Rattlesnake	40.289980	-77.635604	40.284410	-77.612818	Conococheague Mountain, Tuscarora State Forest
Perry	Timber Rattlesnake	40.266702	-77.508005	40.262470	-77.491688	Bowers Mountain, Tuscarora State Forest
Cumberland	Timber Rattlesnake	40.256799	-77.469902	40.251875	-77.448899	Blue Mountain
Cumberland	Timber Rattlesnake	40.246850	-77.428032	40.245663	-77.385058	Wildcat Ridge, Tuscarora State Forest

Table 2. Additional Timber Rattlesnake Habitat Assessments Areas on the Pennsylvania Pipeline:

County	Potential Conflict	Western End of Habitat Assessment		Eastern End of Habitat Assessment		Comment
		Latitude	Longitude	Latitude	Longitude	
Indiana / Cambria	Timber Rattlesnake	40.43147	-78.96987	40.42383	-78.91892	Laurel Ridge
Blair	Timber Rattlesnake	40.44429	-78.58242	40.46527	-78.48908	South of Gallitzin
Blair	Timber Rattlesnake	40.43944	-78.29419	40.43324	-78.26747	Lock Mountain
Blair / Huntingdon	Timber Rattlesnake	40.41387	-78.18891	40.40363	-78.16306	Tussey Mountain
Huntingdon	Timber Rattlesnake	40.36880	-78.06593	40.36017	-78.02839	Terrace Mountain
Huntingdon	Timber Rattlesnake	40.35668	-78.00744	40.34815	-77.95347	Sideling/Jacks Mountains
Juniata / Perry	Timber Rattlesnake	40.29864	-77.68276	40.29433	-77.65788	Tuscarora Mountain
Perry	Timber Rattlesnake	40.29291	-77.65075	40.28998	-77.63560	Conococheague Mountain
Perry	Timber Rattlesnake	40.27856	-77.57443	40.26670	-77.50800	Schultz/Bowers Mountains
Perry	Timber Rattlesnake	40.26247	-77.49168	40.25679	-77.46990	Blue Mountain

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We provided a list of qualified surveyors and habitat assessment protocol for your convenience with our January 27, 2014 letter. This list is not an exhaustive list of qualified rattlesnake surveyors in Pennsylvania as there may be qualified surveyors who have not asked to be placed on this list. It is not mandatory that you use someone on this list.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Gary Smith at 814-279-3080 and refer to the SIR # 41856. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,



Heather A. Smiles, Chief
Natural Gas Section

HAS/GAS/dn

Appendix II. PFBC Timber Rattlesnake Habitat Assessment Data Forms

Pennsylvania Fish & Boat Commission, Natural Diversity Section Timber Rattlesnake Habitat Assessment Form (revised 02/11/10)

Project Information

Project/Property Name: Pennsylvania Pipeline Project SIR# 41856

Project Type/Description: Natural gas pipeline

Project Size* (acreage): 350 miles

Applicant/Landowner Name: Sunoco Pipeline, LP

County: Huntingdon Quad: Cassville Township/Municipality: Union

* Attach a copy of topographic map and a site sketch showing survey site and natural features identified.

Assessment Site Information [Areas within and at least 300 feet around the entire project area need to be assessed.]

Date: 6/24/14 Time: 1100

Site ID**: Terrace Mountain

Latitude: 40°21'49.3" N Longitude: 78°2'48.5" W

Map Datum Used: NAD 83

Assessment Size** (acreage): 269

** The surveyor should use his/her judgement on the size of the area that a single assessment encompasses. **Additional assessment forms should be used to accurately describe and evaluate large contiguous areas by utilizing a separate form for separate habitat areas within the project boundaries. Each separate area assessed should be assigned a Site ID name that is referenced to the overall site sketch.**

Weather Conditions (Note: Assessment cannot be conducted in snow cover.)

Air temperature (°F) 90 % Cloud Cover 40

Habitat Description

General description: Scattered rocky areas on mostly gentle slope in dry oak forest. Pockets of rock are on slightly steeper areas of slope and piled along existing ROW.

Level of remoteness/nearby disturbance (roads, homes, buildings, utility right-of-ways, etc.):

Immediately adjacent to several isolated homes, bisected by existing ROW.

Topographical description: E slope Terrace Mtn. from summit to ~1500ft.; steeper towards top

Slope (Degrees) 7

Aspect SE (compass orientation, i.e., direction hillside faces)

Ground Cover:

% rocky ground cover: 10

% rocky ground cover that receives direct sunlight: 10

List size range and shape of rocks (round, flat, etc.): Mostly smaller, partially embedded rocks <1m across and 6in. thick, but also scattered larger rocks lower on slope.

Are there rock outcrops or ledges present? Yes

Are boulder fields, and/or talus/scree slopes present? Yes

Are flat gestation slabs present? Yes

Project Name Pennsylvania Pipeline Project

Site ID # Terrace Mtn. (con't)

Vegetative Composition:

% Tree Canopy Cover 80

Dominant species present in and surrounding the described habitat:

Trees: Black birch, chestnut oak, black oak

Shrubs: Mountain laurel, black huckleberry, lowbush blueberry, blackberry

Other plant species of note: Broomsedge, deertongue grass

Species Observations

Were herpetofauna species or their signs (e.g., sheds, scat, "forms") observed on-site (include timber rattlesnake observations)? If so, what species and how many?

1 Eastern Box Turtle

Additional Comments/Observations: (use additional sheets if necessary)

This assessment identified two areas of potential denning habitat on either side of the existing pipeline near the 1700ft. elevation contour and several areas of potential gestation habitat along the existing pipeline and in open areas nearby.

INVESTIGATOR'S OPINION

In your opinion, is there timber rattlesnake critical habitat? Yes or No
If Yes, what timber rattlesnake critical habitat occurs in this area? See below.

Hibernaculum/Den Yes or No

Gestation/Birthing Yes or No

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Philip R. Dunning

Philip Dunning

6/24/14

Investigator's Name (print)

Investigator's Signature

Date

Reporting. The following items need to be submitted for review:

- (1) Timber rattlesnake habitat assessment form.
- (2) A project narrative/description, exact project location, equipment to be used in earth moving activities
- (3) Color photographs of surveyed area showing: general panorama, rocky areas, and specimens observed.
- (4) Site sketch showing the location and direction of photos taken.
- (5) Topographic map showing location of area surveyed, the identified potential habitat delineated, the proposed project and associated boundaries.

Please mail these items to: **Natural Diversity Section
PA Fish & Boat Commission
450 Robinson Lane
Bellefonte, PA 16823**

ATTACHMENT 4

Note: Parts of Attachment 4 has been modified to only include relevant results/survey data for those areas located within/near USACE properties (i.e. Terrance Mountain)

Timber Rattlesnake
(*Crotalus horridus*)
Conservation Plan

Pennsylvania Pipeline Project

Prepared for:

Sunoco Logistics, L.P.
525 Fritztown Road
Sinking Spring, PA 19608

Prepared by:

Tetra Tech, Inc.
661 Anderson Drive
Pittsburgh, Pennsylvania 15220
(412) 921-7090
Fax (412) 921-4040

Submitted to:

**Pennsylvania Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane
Bellefonte, PA 16823**

August 2015

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Appendix A. Timber Rattlesnake Habitat Assessment and Presence/Absence Survey Report

1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

Sunoco Pipeline, L.P. (SPLP) proposes to construct and operate the Pennsylvania Pipeline Project (PPP or Project) to expand existing pipeline systems and provide natural gas liquid (NGL) transportation of up to 350,000 barrels per day. The Project involves the phased installation of approximately 561 miles of two parallel pipelines within a 306-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, Pennsylvania to SPLP's Marcus Hook facility in, Delaware County, Pennsylvania with the purpose of interconnecting with existing SPLP Mariner East pipelines. These lines would parallel the previously installed Mariner East 8-inch line from the majority of the Project. Initially, a 20-inch diameter pipeline would be installed within the ROW from Houston, PA to the Marcus Hook facility (306 miles) and a second, up to 20-inch diameter pipeline, is proposed be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, Pennsylvania to the Marcus Hook facility, paralleling the initial line for approximately 255 miles. The Project location is shown on Figure 1.

The Project will provide transportation service for up to 700,000 barrels of NGL per day from the Utica and Marcellus Shale formations for both domestic and international markets. The Project will transport propane, butane, and ethane across Pennsylvania. SPLP's upstream customers currently extract natural gas in the form of methane from the aforementioned geologic formations for distribution to the community. The natural gas extracted for this Project will provide fuel that is used for power generation, heating, and cooking. NGLs are separated from the natural gas stream before it is shipped on the natural gas piping network. Upstream shippers are currently limited by the shortage of NGL transport systems. In addition, the Project will provide along its route across Pennsylvania various exit points for the supply of desperately needed propane, at affordable prices to local distributors. This is especially helpful during peak demand periods when there would otherwise be a shortage of supplies. Finally, upon completion, the Pennsylvania Pipeline Project will promote sustained economic development and jobs-creation throughout Pennsylvania.

1.2 PURPOSE OF MITIGATION PLAN

The timber rattlesnake is of noted value to the Commonwealth of Pennsylvania. Although not a federally listed species under the Endangered Species Act (ESA), it is listed as a candidate species under the Pennsylvania Fish and Boat Commission (PFBC) Chapter 75 code, and therefore has the potential for listing as threatened or endangered. Killing of timber rattlesnakes is prohibited by the PFBC pursuant to 58 Pa. Code Section 79.6.

As part of the Pennsylvania Natural Diversity Inventory review process, the timber rattlesnake was noted by the PFBC as concern for the Project as the proposed location and activities have the potential to harm timber rattlesnakes and their habitat. Tetra Tech, Inc. (Tetra Tech) has prepared this Timber Rattlesnake Conservation Plan for SPLP to describe the measures already taken to and to be taken to avoid, minimize, and mitigate for potential impacts to timber rattlesnakes and their habitat, as well as safeguard workers.

This Timber Rattlesnake Conservation Plan provides a brief review of the natural history of the species, identifies potential habitat and types within the Project area, and measures to reduce impacts to these areas. Procedures to mitigate for potential impacts will be performed pre-construction, during construction, and post-construction of the Project. These measures have been developed based on the results of consultations with the PFBC, habitat assessments, and presence/absence surveys performed by Wildlife Specialists, LLC.

2.0 NATURAL HISTORY

This section provides a brief overview of the timber rattlesnake's physical characteristics, range, hibernation, seasonal activity, diet, reproductive habits, and general habitat requirements. The primary literature sources utilized included Reinert *et al.* (1984), Reinert (1985), Ernst and Barbour (1989), Martin (1992a and 1992b), Shaffer (1991), and Brown (1993).

The timber rattlesnake is equipped with a broad triangular head, vertical pupils, and heat sensitive pits between the eye and nostril. In the northern range of its habitat, the body color phases are either yellow or black, with dark, V-shaped crossbands across the back. Coloration does not change from one phase to the other and the pattern may not be obvious if the body color is very dark. Regardless of the color phase, the tail remains black, and contains a rattle, which produces a buzzing sound when vibrated. The head is usually unpatterned and is covered with many small scales. Adults reach an average length of 3 to 4 feet, with some reaching a maximum length of 6 feet (Shaffer 1991).

The timber rattlesnake generally occurs in a broad band across central to eastern Pennsylvania, and is absent along the extreme western edge and southeastern corner of the state. The range closely corresponds to the major mountain ranges that diagonally cross the state. Gravid females make small movements and may remain at the den site or in open, rocky, habitat nearby (Zappalorti *et al.* 1998).

In northern states, timber rattlesnakes spend nearly half of the year hibernating underground in dens. Emergence and ingress dates vary year to year, but emergence typically occurs in late March to mid-May in Pennsylvania. This event occurs as daytime temperatures approach 60 degrees. Ingress typically occurs in early to late-October in Pennsylvania as temperatures decrease. Gravid females may also return to the den to give birth in late summer. During hibernation, several species of snakes may utilize a den at the same time: timber rattlesnake, garter snake (*Thamnophis sirtalis*), black rat snake (*Pantherophis alleghaniensis*), and racers (*Coluber sp.*). The number of snakes can range into the hundreds, but is usually between 10 and 30. During birthing events the number of snakes in one den is generally much lower (Urban 1999).

Timber rattlesnakes begin their active season in spring by making movements away from the den, usually within two weeks following emergence, and end their active season with a movement toward the den. Between these two predictable events is movement from one foraging area to another, and movements to open basking sites to thermoregulate (especially following meals). The

timber rattlesnake forages at night and prefers warm-blooded prey such as mice, rabbits, shrews, and chipmunks (Zappalorti *et al.* 1998).

Female rattlesnakes mature in 4 to 5 years and breed for the first time at 5 or 6 years of age. Mating occurs between July and September with the female giving birth to 5 to 17 live young in August or September of the following year. Gravid females give birth in the upper portions of the den (*i.e.*, rock outcrops and/or boulders) or other suitable areas in the general vicinity of the den. Timber rattlesnakes in the northern part of their range may breed every other year, or possibly every third or fourth year, resulting in a relatively low biological replacement rate (Zappalorti *et al.* 1998). This variability depends on external factors such as food availability, density of the species, stress, and weather.

Timber rattlesnake habitat can generally be divided into four components: 1) gestation habitat, reserved for gravid females but may be utilized by any segment of the population, 2) the overwintering habitat or den site, 3) summer foraging habitat, and 4) transient habitat.

Gestation habitats consists of a rocky area with few canopy trees, a grassy knoll, or an open shrubby area with large flat rocks surrounding a den. Another feature that adds to the selection of a gestation habitat site includes the proximity of an area that receives 6 to 8 hours of direct sunlight a day, such as sand/gravel roads, railroad beds, and maintained utility ROWs (Zappalorti *et al.* 1998).

Timber rattlesnake populations reuse the same wintering den site for generations. In Pennsylvania, dens are located in rocky areas, usually with a southerly exposure and some tree canopy cover. The rocks must have an opening and underground crevice that reaches below the frost line, approximately 3 to 5 feet below ground. The interior of the dens will maintain a temperature of approximately 50 degrees year-round. Martin (1992b) describes three den types in mountainous regions: 1) fissures in ledges, 2) talus (below a cliff) or open scree (not associated with a cliff), and 3) fallen rock partly covered in soil.

Foraging or summer habitat, the third type of habitat utilized, is used by adult male and nongravid female timber rattlesnakes and consists of (in the northern ranges) deciduous or mixed deciduous-coniferous forests with canopy closures averaging between 60 and 75 percent (Reinert 1984a, 1984b, Brown 1993). Summer habitat may be dictated more by the presence of the timber rattlesnake's principle prey.

Transient habitat, the final type of habitat, encompasses the habitat the snakes utilize to travel or migrate to their preferred summer foraging habitat locations. This habitat is distinct from the den or gestation habitat, but is similar to summer habitat and may contain stopover basking sites with exposed rock and reduced forest canopy cover.

3.0 MITIGATION PLAN

This section identifies impact minimization measures to be implemented by SPLP during pre-construction, construction, and post-construction operations and maintenance activities in areas of potential timber rattlesnake habitat. Since SPLP proposes to construct the pipeline in the spring/summer of 2016, populations of gravid females and/or juvenile snakes (*i.e.*, gestation habitats) are the primary concern. Adult snakes that are migrating through or foraging in the Project area will most likely leave the area during clearing activities. Consequently, the majority of SPLP's mitigation plan focuses on timber rattlesnake gestation habitats located in the Project area.

3.1 PRE-CONSTRUCTION MITIGATION MEASURES

Pre-construction measures include identification of active den and gestation habitats within areas identified as potential habitat, identification of suitable relocation/release sites, avoidance planning, as well as training of construction personnel.

3.1.1 Gestation and Den Habitat Surveys

Based on correspondence with the PFBC, 19 areas of potential timber rattlesnake habitat were surveyed within the proposed Pennsylvania Pipeline Project area (Figures 2 and 3). Survey areas were located in the mountainous parts of Indiana, Cambria, Blair, Huntingdon, Juniata, Perry, and Cumberland Counties (Table 1). Habitat assessments and presence/absence surveys were conducted from May 2014 to July 2015 by PFBC approved timber rattlesnake biologists following protocols during the appropriate survey periods based on PFBC guidelines. The report summarizing these findings is provided in Appendix A.

The biologists concentrated efforts in areas of large boulders and rock outcroppings. Surveys were performed within 500 feet on either side of the proposed pipeline centerline and habitat areas were evaluated, delineated, and classified as potential gestation or denning habitat. For areas identified as potential denning habitat, presence/absence surveys included four independent site visits on non-consecutive days between April 15 and May 31, 2014 for the surveys completed during 2014 per PFBC guidance. In 2015, PFBC modified the denning survey period to end on May 15. For areas identified as potential gestation habitat, presence/absence surveys included four independent site surveys conducted at least one week apart from each other between June 1 and September 15 as required by the PFBC. These presence/absence surveys formed the baseline/existing environment condition for the Project in regards to timber rattlesnake habitat and presence/absence.

Gestation and den habitat was confirmed in 8 of the 19 survey areas. These habitats include 8 denning habitats and 15 gestation habitats. A total of 282 timber rattlesnakes were observed across 16 of the 19 survey areas. These results are summarized in Table 1. Five of the eight areas with confirmed denning habitat were determined to be within the Limit of Disturbance (LOD) and the proposed Project. As a result the project was shifted to avoid these areas. Similarly, six of the 15 confirmed gestation habitats were determined to be within the LOD of the proposed Project. However, avoidance of gestation habitats was considered to be unnecessary given additional mitigation measures are implemented (see Section 3.2). The following sections provide a brief summary of the survey results of each area.

Laurel Ridge

The Laurel Ridge survey area (Figure 4) is an approximately 351 acre area located in Indiana and Cambria Counties. Eight potential denning habitats and 8 potential gestation habitats were delineated at this survey area. One denning habitat and one gestation habitat were confirmed at this survey area and 82 timber rattlesnakes were observed.

Laurel Ridge South Exposure

The Laurel Ridge South Exposure survey area (Figure 5) is approximately 236 acres located in Cambria County. Nine potential denning habitats and four potential gestation habitats were delineated at this survey area. No gestation or denning habitats were confirmed and no timber rattlesnakes were observed in this survey area.

Altoona Bypass 1

The Altoona Bypass 1 survey area (Figures 6-10) is approximately 1,032 acres located in Blair and Cambria Counties. Seven potential denning habitats and 40 potential gestation habitats were delineated at this survey area. Two denning habitats and three gestation habitats were confirmed at this survey area and 29 timber rattlesnakes were observed.

Altoona Bypass 2

The Altoona Bypass 2 survey area (Figure 11) is approximately 237 acres located in Blair County. One potential denning habitat and two potential gestation habitats were delineated at this survey area. No gestation or denning habitats were confirmed and three timber rattlesnakes were observed in this survey area.

Lock Mountain 2

The Lock Mountain 2 survey area (Figure 12) is approximately 176 acres located in Blair County. No potential denning habitats and 11 potential gestation habitat areas were delineated at this survey area. No gestation or denning habitats were confirmed and no timber rattlesnakes were observed in this survey area.

Lock Mountain 1

The Lock Mountain 1 survey area (Figure 13) is approximately 92 acres located in Blair County. Two potential denning habitats and 4 potential gestation habitats were delineated in this survey area. No gestation or denning habitats were confirmed and no timber rattlesnakes were observed in this survey area.

Tussey Mountain

The Tussey Mountain survey area (Figure 14) is approximately 204 acres located in Blair and Huntingdon Counties. Three potential denning habitats and 11 potential gestation habitat areas were delineated at this survey area. No gestation or denning habitats were confirmed and two timber rattlesnakes were observed in this survey area.

Terrace Mountain

The Terrace Mountain survey area (Figure 15) is approximately 269 acres located in Huntingdon County. Two potential denning habitats and 10 potential gestation habitats were delineated at this survey area. No gestation or denning habitats were confirmed and one timber rattlesnake was observed in this survey area.

Sideling, Jacks Mountain

The Sideling, Jacks Mountain survey area (Figures 16-17) is approximately 374 acres located in Huntingdon County. Two potential denning habitats and 15 potential gestation habitat areas were delineated at this survey area. No gestation or denning habitats were confirmed and four timber rattlesnakes were observed in this survey area.

Jacks Mountain, SGL 71

The Jacks Mountain, SGL 71 survey area (Figures 18-19) is approximately 298 acres located in Huntingdon County. Three potential denning habitats and 8 potential gestation habitats were delineated at this survey area. Two gestation habitats and no denning habitats were confirmed and 23 timber rattlesnakes were observed in this survey area.

Blacklog Mountain

The Blacklog Mountain survey area (Figure 20) is approximately 214 acres located in Huntingdon County. Seven potential denning habitats and 14 potential gestation habitat areas were delineated at this survey area. No gestation or denning habitats were confirmed and no timber rattlesnakes were observed in this survey area.

Shade Mountain

The Shade Mountain survey area (Figure 21) is approximately 303 acres located in Huntingdon County. Three potential denning habitats and 24 potential gestation habitats were delineated in this survey area. One denning habitat and two gestation habitats were confirmed and 54 timber rattlesnakes were observed at this survey area.

Tuscarora Mountain

The Tuscarora Mountain survey area (Figure 22) is approximately 182 acres located in Juniata and Perry Counties. One potential denning habitat and 18 potential gestation habitats were delineated in this survey area. No gestation or denning habitats were confirmed and two timber rattlesnakes were observed in this survey area.

Conococheague Mountain 1 Tuscarora State Forest

The Conococheague Mountain 1 Tuscarora State Forest survey area (Figure 23) is approximately 171 acres located in Perry County. Two potential denning habitats and 15 potential gestation habitats were delineated in this survey area. No gestation or denning habitats were confirmed and 12 timber rattlesnakes were observed in this survey area.

Conococheague Mountain 2

The Conococheague Mountain 2 (Figure 24) survey area is approximately 118 acres located in Perry County. No potential denning habitats and seven potential gestation habitats were delineated in this survey area. No gestation or denning habitats were confirmed and 4 timber rattlesnakes were observed in this survey area.

Schultz, Bowers Mountain

The Schultz, Bowers Mountain survey area (Figures 25-27) is approximately 455 acres located in Perry County. Four potential denning habitats and 38 potential gestation habitats were delineated in this survey area. One denning habitat and two gestation habitats were confirmed and 41 timber rattlesnakes were observed at this survey area.

Bowers Mountain Tuscarora State Forest

The Bowers Mountain Tuscarora State Forest Survey area (Figure 28) is approximately 129 acres located in Perry County. Three potential denning habitats and 22 potential gestation habitats were delineated in this survey area. Two denning habitats and three gestation habitats were confirmed and 11 timber rattlesnakes were observed at this survey area.

Blue Mountain West

The Blue Mountain West Survey area (Figure 29) is approximately 166 acres located in Perry County. One potential denning habitat and 3 potential gestation habitats were delineated in this survey area. No denning habitats and one gestation habitat was confirmed and nine timber rattlesnakes were observed at this survey area.

Blue Mountain East

The Blue Mountain East survey area (Figure 30) is approximately 159 acres located in Cumberland County. Two potential denning habitats and 10 potential gestation habitats were delineated in this survey area. One gestation habitat and one denning habitat were confirmed and 4 timber rattlesnakes were observed in this survey area.

Wildcat Ridge Tuscarora State Forest

The Wildcat Ridge Tuscarora State Forest survey area (Figures 31-32) is approximately 294 acres located in Cumberland County. No potential denning habitats and 11 potential gestation habitats were delineated in this survey area. No gestation or denning habitats were confirmed and one timber rattlesnake was observed in this survey area.

3.1.2 Project Redesign

As outlined above, eight den sites were confirmed within the survey areas. However, only five of the eight sites were located within the proposed Project LODs. With the understanding of the importance of den sites to the timber rattlesnakes life history, upon discovery SPLP instructed project designers to avoid these habitats to the maximum extent practicable and with consideration of other environmental impacts (e.g., additional new ROW, additional forested area impacts). As a result, project designers were able to reroute the project around the five den sites.

Two of the denning habitats that were in the Altoona Bypass 1 survey area were avoided by a reroute passing 25 feet north of the habitats. The reroute for the Shade Mountain Survey area passes a minimum of 15 feet south of the denning habitat. The reroute for the Shultz, Bower's Mountain survey area passes a minimum of 15 feet southwest of the denning habitat. Finally, the reroute for the Bower's Mountain, Tuscarora Forest survey area passes 15 feet southwest of the denning habitat, however additional temporary workspace extends to the boundary of the delineated habitat. These avoidance areas are shown in Figures 33-36.

Although the construction of pipeline is in close proximity to these confirmed den sites, the den site will not be directly impacted and indirect impacts are not anticipated due to the distance away and during construction monitoring that SPLP will commit too. In addition, the construction of the pipeline will be temporary, however will permanently provide additional open habitats in a predominantly closed canopy landscape.

Six of the 15 confirmed gestation habitats were determined to be within the LOD of the proposed Project. However, avoidance of gestation habitats was considered to be unnecessary given additional mitigation measures to be implemented (i.e., habitat restoration). These measures are provided in Section 3.2.

3.1.3 Identification of Release Sites

SPLP's PFBC approved rattlesnake surveyors will review existing survey results as well as USGS topographic maps and aerial photographs to locate areas that provide suitable habitat, as defined in Section 2.0, for translocation of timber rattlesnakes captured on the construction ROW during construction. Based on this preliminary review of information, the same biologist used to identify den and gestation habitats will characterize the potential release sites, identify their location on USGS topographic maps, and rank the sites based on their suitability and proximity to the den and gestation habitat sites and construction corridor.

In general, studies have shown that relocation distances greater than 1,000-feet from the local den or gestation habitat sites result in mortality to the snake (Reinert 1998). Shorter translocations, but to the extremes of an individual's activity range, may actually produce rapid returns to the point of capture (Breisch 1998). Given this information, snakes will be moved to the nearest suitable habitat off the ROW and the ROW will continually be monitored for additional timber rattlesnakes and for those that may have returned.

3.1.4 Personnel Training

All Project personnel will be required to attend Environmental Training prior to working in the field on this Project. SPLP will train personnel and provide instruction on the species protected status, sensitivity of the information being provided, proper identification, encounter procedures, and proper notification procedures in the event of a timber rattlesnake encounter. Construction personnel will then sign-off, verifying that they were trained, and are aware of SPLP's expectations regarding the protection of timber rattlesnakes and wildlife in general.

3.2 CONSTRUCTION MITIGATION MEASURES

Construction mitigation measures include timing restrictions, construction BMPs, and monitoring and relocation procedures.

3.2.1 Timing Restrictions

No construction timing restrictions are necessary due to the avoidance of den habitats and commitment to providing timber rattlesnake monitors during construction activities (see Section 3.2.2). Construction past the five confirmed den locations that were avoided, but are in close proximity to the project, will occur at any time. However, these areas will be monitored closely

during emergence period, between April 15 and May 15, and the return period, from September 1 to October 15. Knowing if and when these dens sites are vacated during the summer months or occupied during over winter will be important information for planning construction and intensifying monitoring in these areas.

3.2.2 Construction BMPs

Within the 19 areas identified in Figures 2-30, if erosion control fabric is to be used, materials known to reduce the risk of snake entrapment will be selected. During restoration and seeding, monofilament/plastic netting will be avoided. 100% biodegradable materials will be used for erosion control/moisture containment blankets. The designated PFBC approved timber rattlesnake biologist will ensure the proper construction BMPs are used to reduce the risk of entrapment of reptiles and amphibians.

3.2.3 Monitoring and Relocation

All monitoring and handling will be conducted by PFBC approved timber rattlesnake biologists who possess the proper Scientific Collector Permits, and the proper skills to handle this venomous species. These individuals will be assigned the primary responsibility for minimizing risk to rattlesnakes and safeguard personnel during construction, and will be the primary point of contact whenever construction crews encounter a rattlesnake. They will be responsible for the pre-construction surveys, during construction monitoring, capture and handling, and all reporting of findings and activities.

Construction monitoring by a PFBC approved timber rattlesnake biologist will only be required between April 15 and October 15 during the timber rattlesnakes active season. Figures 37 to 46 provide the areas proposed for construction monitoring and were derived in consultation with a Stan Boder, a PFBC approved timber rattlesnake biologist. Monitoring areas were determined based on habitat and the results of the 2014 and 2015 surveys. The monitoring will be restricted to 11 monitoring areas depicted on Figures 37 to 46 with concentrated efforts spent on potential and confirmed denning and gestation habitats. Monitoring will include all construction areas including access roads and staging areas located within the 11 monitoring areas.

To minimize potential adverse impacts to individual timber rattlesnakes that may occur in the construction corridor, SPLP will conduct pre-construction surveys within 48 hours prior to the scheduled construction activity. The purpose of this pre-construction survey is to locate individual rattlesnakes within the construction corridor and ensure that they are safely removed from the construction area. Active construction is expected to keep timber rattlesnakes out of work areas,

however, if construction activities in the area temporarily cease, or there is break in the construction sequencing then re-inspection of the work areas will be warranted prior to the next scheduled activity. If a trench or bore pit is left open within the monitoring areas, then daily inspection of the trench/pit for trapped rattlesnakes (and other wildlife) will be required until these areas are backfilled.

Snakes observed in the construction area will be captured and relocated to a previously selected release site. To avoid injury to the snake, the timber rattlesnake surveyor shall capture and handle the snake using accepted protocol methods. Captured snakes will be moved a distance that minimizes the linear distance from point of capture while simultaneously reducing the probability of its immediate return. To prevent the relocated individuals from returning to the construction area, SPLP will install temporary silt fencing for approximately 200 feet along the edge of the workspace facing the release point.

3.3 POST CONSTRUCTION MITIGATION MEASURES

Post-construction mitigation measures include site-specific restoration activities, operation and maintenance procedures, and agency reporting.

3.3.1 Restoration

The installation of the PPP would parallel an already existing maintained SPLP 8-inch pipeline ROW almost for its entire length through the timber rattlesnake surveys areas. All but the 18.8 mile Altoona Bypass portion of the line is a parallel installation. This Project may have the potential to benefit timber rattlesnakes by creating additional habitat as evidenced by the already existing line that has provided timber rattlesnakes with potential and confirmed den and gestation habitat. As a general practice, following completion of construction, boulders and other rocky debris will be moved to the edge of the temporary cleared workspace during final cleanup activities. This windrowed rock may provide additional foraging, basking, and summer habitat for the timber rattlesnake, and minimize use of the actively maintained portion of the ROW. The Project's PFBC approved timber rattlesnake biologists will use the PFBC's Guidelines for *Timber Rattlesnake Habitat Creation (revised 3-5-2010) Food Plots – Gas Well Openings – Access Roads – Pipelines* and the Appendix A survey results to identify opportunities for timber rattlesnake habitat creation. In general, it is expected that the availability of timber rattlesnake critical habitats would increase in this primarily forested landscape due to construction of Project.

As noted previously, the Project LODs do intersect six confirmed gestation habitats. These habitats will be intensely monitored during construction and restoration. These habitats have been and will be again photographed prior to construction and restored to the existing condition to the maximum extent practicable. The Project's PFBC approved timber rattlesnake biologists will use the PFBC's *Guidelines for Timber Rattlesnake Habitat Creation (revised 3-5-2010) Food Plots – Gas Well Openings – Access Roads – Pipelines* to ensure these habitats are properly restored to the pre-construction condition in terms of rock placement and aerial extent of the area.

All created and restored habitats will be thoroughly documented in the field and presented within the final report as outlined in Section 3.3.3.

3.3.2 Operation and Maintenance Activities

Routine operation and maintenance activities such as mowing, erosion control, and bank stabilization will not require any special mitigation efforts other than the training of the maintenance crew. Any timber rattlesnake encountered during routine activities will be left undisturbed and the area will be vacated. If areas are in need of excavation or repair, SPLP follows appropriate environmental protocols, such as PNDI searches to ensure those activities will not impact sensitive species.

3.3.3 Reporting

A report that summarizes implementation of this conservation plan will be submitted to the PFBC upon completion of pipeline construction and ROW restoration. The PFBC is also welcome to schedule site visits during all phases of this plans implementation and request any interim data at any time. Per the state's requirements, this report will include the following:

- the name(s) and qualifications of the investigator(s);
- survey/monitoring date(s);
- areas surveyed/monitored;
- number of timber rattlesnakes observed;
- sex and length of timber rattlesnakes captured;
- location of timber rattlesnake observations/captures;
- habitat information for observations/captures;
- mitigation measures implemented;
- details regarding restored and created habitats; and,
- observations of other herpetofauna.

4.0 CONCLUSION

This Timber Rattlesnake Conservation Plan provides SPLP's commitment to avoidance, minimization, and mitigation measures to prevent impacts to the timber rattlesnake and its critical habitats (i.e., denning and gestation). SPLP has conducted extensive, on the ground surveys to identify potential critical habitats and follow-up surveys to confirm denning and gestation areas that occur within and adjacent to all Project work areas. These surveys provided the foundation for the development of the preconstruction, construction, and post-construction protection measures outlined within this plan. In particular, five confirmed den sites were rerouted around and the confirmed six gestation sites will be closely monitored and restored. Furthermore, a training program and comprehensive construction monitoring program will be implemented to protect timber rattlesnakes and safeguard construction personnel. With what is known about the presence/absence of the timber rattlesnake and its confirmed habitats in the Project areas, as well as the avoidance, minimization, and mitigation measure commitments provided herein, we conclude that the PPP is not likely to impact the timber rattlesnake.

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TABLE

Table 1.
Timber Rattlesnake Observations and
Critical Habitat Confirmations

Survey Area ID	County	Timber Rattlesnake Observations	Denning Habitats Confirmed	Gestation Habitats Confirmed
Laurel Ridge	Indiana/Cambria	82	1	1
Laurel Ridge South Exposure	Cambria	0	0	0
Altoona Bypass 1	Blair/Cambria	29	2	3
Altoona Bypass 2	Blair	3	0	0
Lock Mountain 1	Blair	0	0	0
Lock Mountain 2	Blair	0	0	0
Tussey Mountain	Blair/Huntingdon	2	0	0
Terrace Mountain	Huntingdon	1	0	0
Sideling, Jacks Mountain	Huntingdon	4	0	0
Jacks Mountain, SGL 71	Huntingdon	23	0	2
Blacklog Mountain	Huntingdon	0	0	0
Shade Mountain	Huntingdon	54	1	2
Tuscarora Mountain	Juniata/Perry	2	0	0
Conococheague Mountain	Perry	4	0	0
Conococheague Mountain, TSF	Perry	12	0	0
Schultz Bowers Mountain	Perry	41	1	2
Bowers Mountain, TSF	Perry	11	2	3
Blue Mountain West	Perry	9	0	1
Blue Mountain East	Cumberland	4	1	1
Wildcat Ridge, TSF	Cumberland	1	0	0
Total	N/A	282	8	15

TSF = Tuscarora State Forest

FIGURES

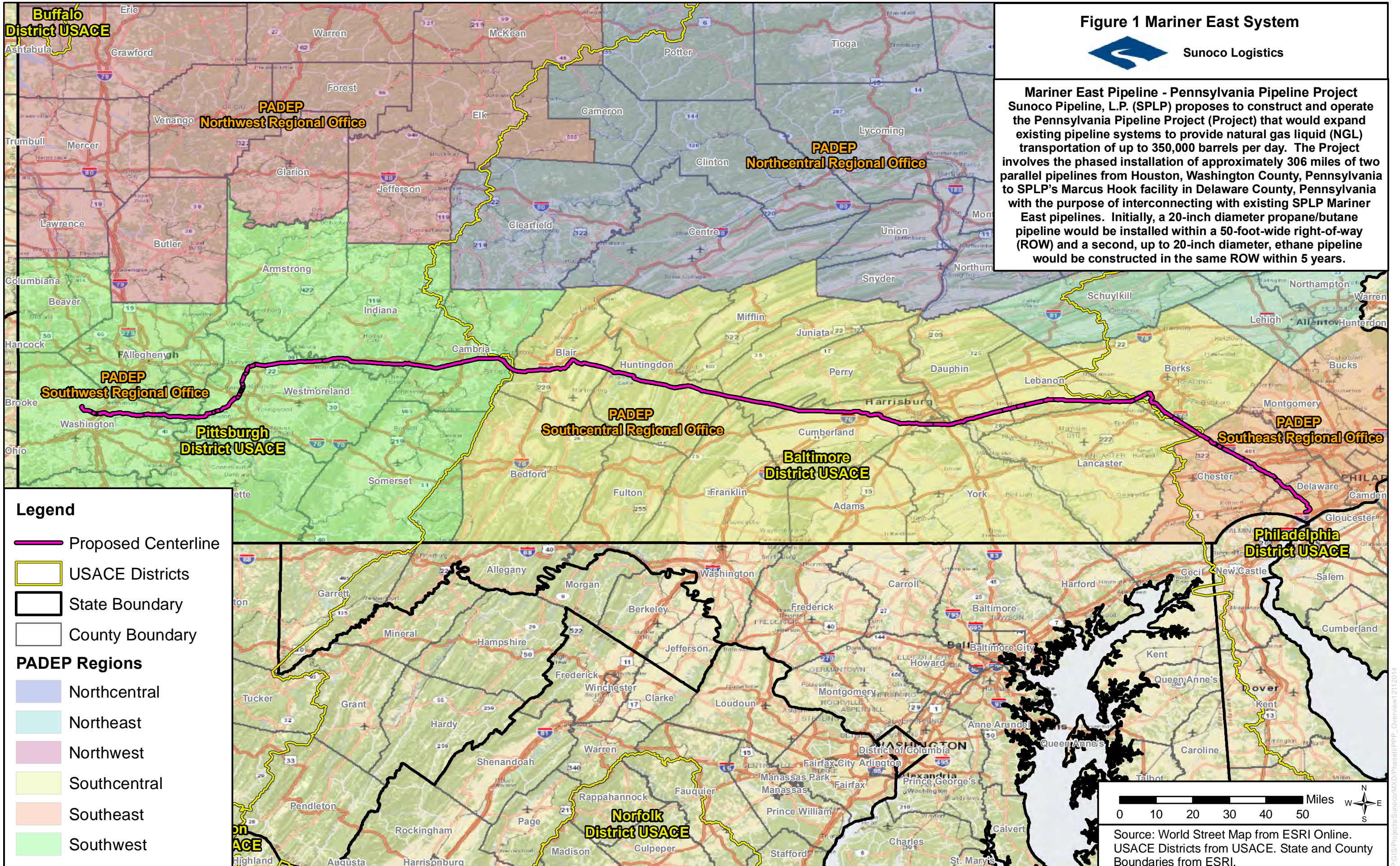
Note: The figures provided herein has been modified to only include relevant results/survey data for those areas located within/near USACE properties (i.e. Terrace Mountain)

Figure 1 Mariner East System



Sunoco Logistics

Mariner East Pipeline - Pennsylvania Pipeline Project
 Sunoco Pipeline, L.P. (SPLP) proposes to construct and operate the Pennsylvania Pipeline Project (Project) that would expand existing pipeline systems to provide natural gas liquid (NGL) transportation of up to 350,000 barrels per day. The Project involves the phased installation of approximately 306 miles of two parallel pipelines from Houston, Washington County, Pennsylvania to SPLP's Marcus Hook facility in Delaware County, Pennsylvania with the purpose of interconnecting with existing SPLP Mariner East pipelines. Initially, a 20-inch diameter propane/butane pipeline would be installed within a 50-foot-wide right-of-way (ROW) and a second, up to 20-inch diameter, ethane pipeline would be constructed in the same ROW within 5 years.

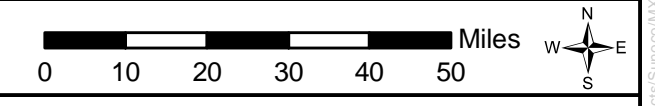


Legend

- Proposed Centerline
- USACE Districts
- State Boundary
- County Boundary

PADEP Regions

- Northcentral
- Northeast
- Northwest
- Southcentral
- Southeast
- Southwest



Source: World Street Map from ESRI Online. USACE Districts from USACE. State and County Boundaries from ESRI.

Sunoco's Pennsylvania Pipeline Project - Timber Rattlesnake Survey Areas

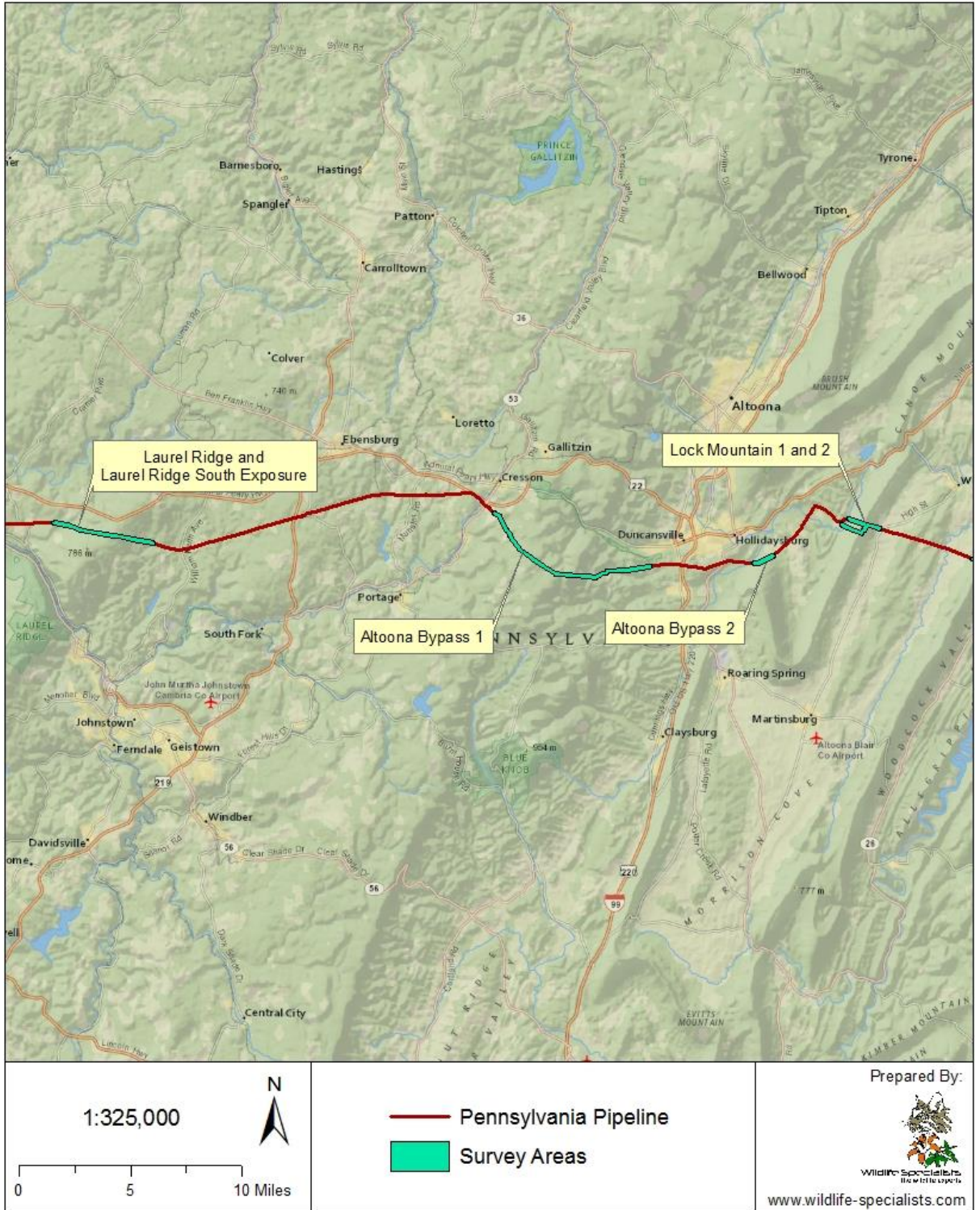
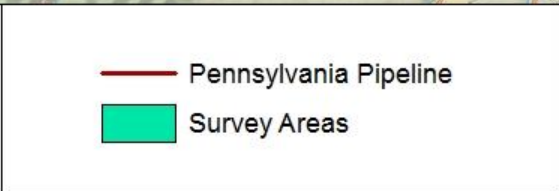
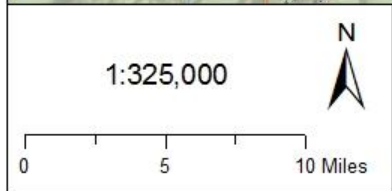
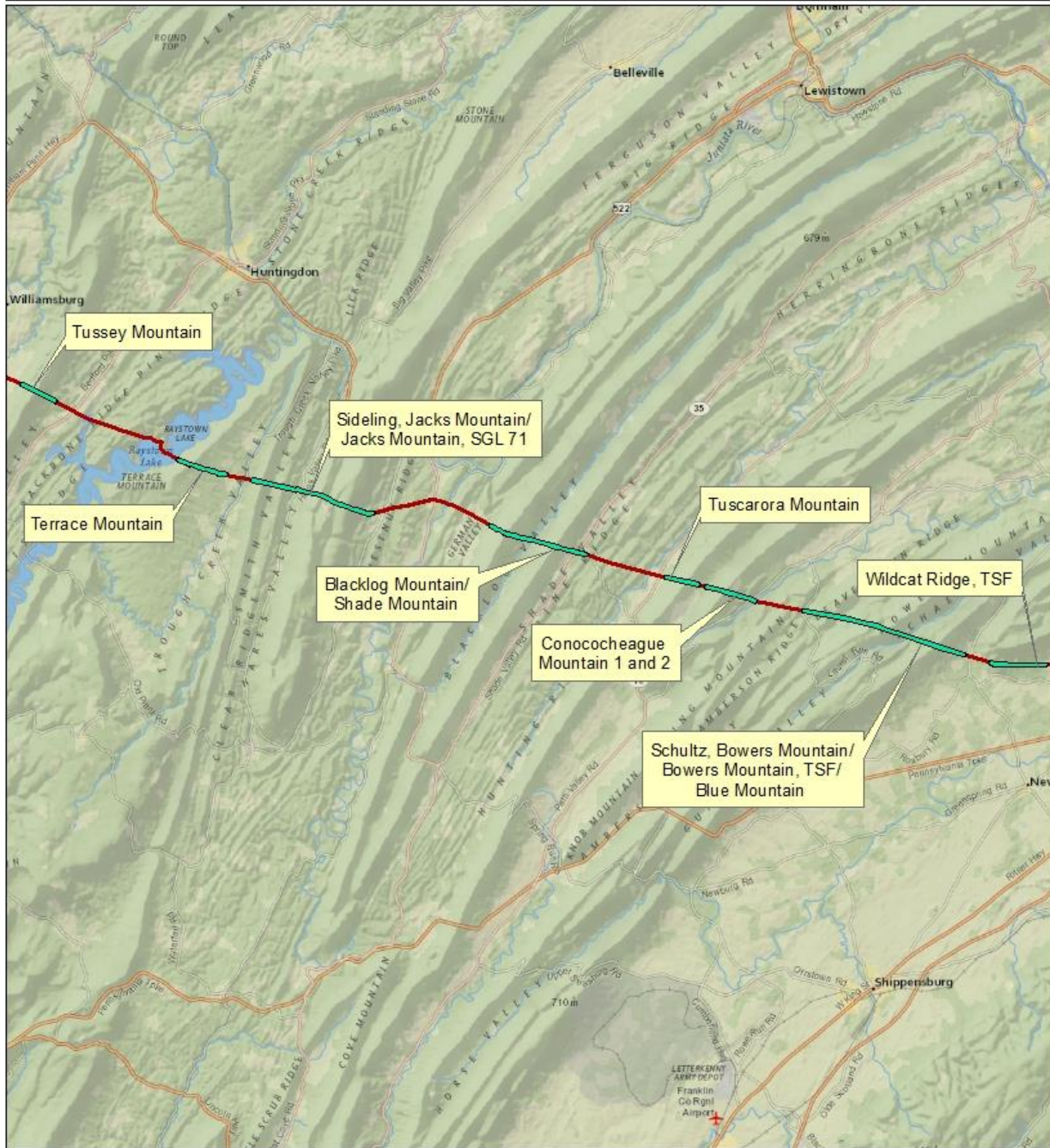


Figure 2. Timber rattlesnake survey areas along Sunoco's proposed Pennsylvania Pipeline Project, Indiana, Cambria, and Blair Counties, Pennsylvania.

Sunoco's Pennsylvania Pipeline Project - Timber Rattlesnake Survey Areas



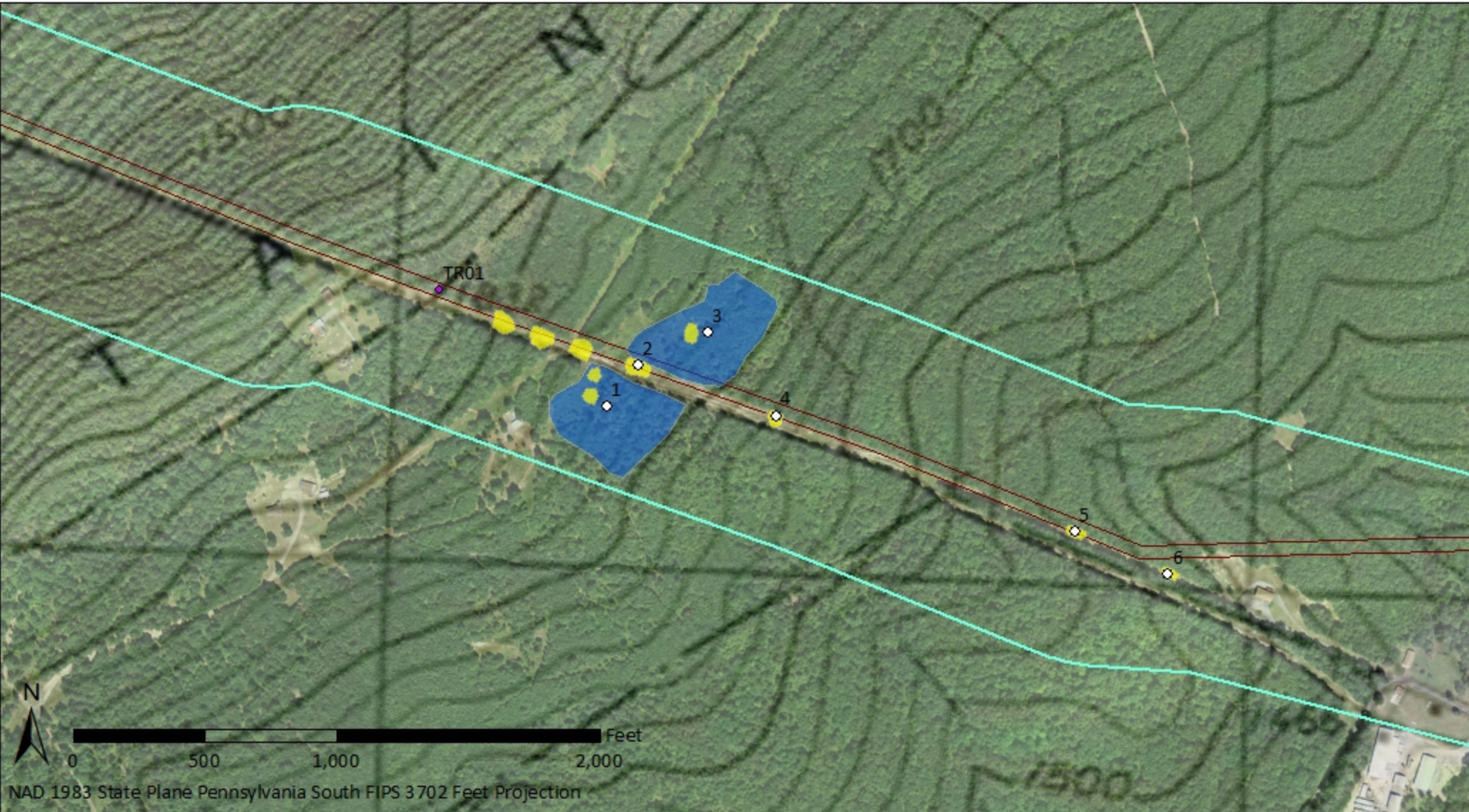
Prepared By:

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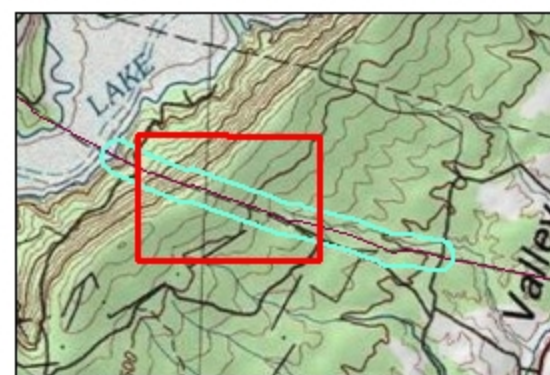
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Figure 3. Timber rattlesnake survey areas along Sunoco's proposed Pennsylvania Pipeline Project, Blair, Huntingdon, Juniata, Perry, and Cumberland Counties, Pennsylvania.

Figure 15 Pennsylvania Pipeline Project - Terrace Mountain Timber Rattlesnake Survey



- ◊ Habitat Photo Point
- ◆ Timber Rattlesnake Observation Point
- Potential Gestation Habitat
- Potential Denning Habitat
- 1000ft. Survey Area
- Limits of Disturbance



Basemaps: Copyright 2014 National Geographic Society, i-cubed, ESRI, USDA FSA, USGS, AEX, GeoEye, AeroGRID, Getmapping, IGP



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- Legend**
- Timber Rattlesnake Observation
 - Timber Rattlesnake Gestation Habitat
 - Timber Rattlesnake Den Site
 - Timber Rattlesnake Monitoring Area
 - Access Road
 - Alignment Centerline
 - Study Area
 - Limit of Disturbance
 - ATWS
 - Block Valve Site Layout

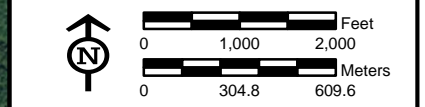
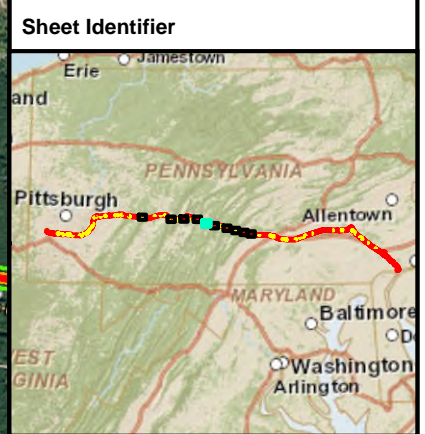


FIGURE 41
TIMBER RATTLESNAKE
CONSTRUCTION MONITORING AREA
PENNSYLVANIA PIPELINE PROJECT
AUGUST 19, 2015 ALIGNMENT
SUNOCO LOGISTICS, L.P.
HUNTINGDON COUNTY, PA



Notes:
 1) Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).

APPENDIX A
TIMBER RATTLESNAKE HABITAT ASSESSMENT AND
PRESENCE/ABSENCE SURVEY REPORT

Note: To avoid duplicate report submission, please see Attachment 3 of this No Impact Request package.