

**THREATENED/ENDANGERED SPECIES/PNDI
INITIAL OUTGOING CORRESPONDENCE**



Tetra Tech, Inc.

Tetra Tech, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, PA 15220-2745

Tel: (412) 921-7090
Fax: (412) 921-4040

LETTER OF TRANSMITTAL

TO
US Fish and Wildlife Service
Endangered Species Biologist
315 South Allen Street
Suite 322
State College, PA 16801

DATE: 12/12/13	JOB NO.: 112IC05958
From: Preston Smith	
RE:	
Large Project PNDI Submission	

WE ARE SENDING YOU Attached Under separate cover via _____ the following items:
 Shop drawings Prints Plans Samples Specifications
 Copy of letter Change order _____

COPIES	DATE	DESCRIPTION
1	12/12/13	Large Project PNDI Submittal for the Mariner East 2 Pipeline

THESE ARE TRANSMITTED as checked below:

- For approval Approved as submitted Resubmit ___ copies for approval
- For your use Approved as noted Submit ___ copies for distribution
- As requested Returned for corrections Return ___ corrected prints
- For review and comment _____

REMARKS:

Enclosed please find a large project PNDI for the Mariner East 2 Pipeline, a 16-inch diameter natural gas liquid (NGL) pipeline that will travel approximately 314 miles through Pennsylvania. If you have any questions, need additional information, or would like to schedule a meeting to discuss the project, please feel free to contact me at 412-921-8167 or via email at Preston.Smith@tetratech.com.

SIGNED 
Preston Smith

cc: Matt Gordon, Sunoco Logistics
Mandy Metcalf, Rooney Engineering
Mark Sladic, Tetra Tech
File 112IC05958



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LETTER OF TRANSMITTAL

TO

PA Fish and Boat Commission

Natural Diversity Section

450 Robinson Lane

Bellefonte, PA 16823

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SIGNED 

Preston Smith

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LETTER OF TRANSMITTAL

Tel: (412) 921-7090
Fax: (412) 921-4040

DATE: 12/12/13	JOB NO.: 112IC05958
From: Preston Smith	
RE:	
Large Project PNDI Submission	

TO

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street
Harrisburg, Pennsylvania 17105

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LETTER OF TRANSMITTAL

DATE: 12/12/13	JOB NO.: 112IC05958
From: Preston Smith	
RE:	
Large Project PNDI Submission	

TO

PA Game Commission

Bureau of Wildlife Habitat Management

Division of Environmental Planning & Habitat Protection

2001 Elmerton Avenue

Harrisburg, PA 17110

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SIGNED _____

Preston Smith

cc: Matt Gordon, Sunoco Logistics
Mandy Metcalf, Rooney Engineering
Mark Sladic, Tetra Tech
File 112IC05958

How to Use the PNDI Large Project Form

If your Project is a “Large Project”— too large/long to search on the online system

Projects are considered “Large Projects” when the ENTIRE project is:

- Linear/Large Projects that exceed the PNDI online project size limits of 10 miles in length or 5165 acres
- Township-wide, Countywide or Statewide Projects. Examples: Act 537 Sewage Plans, Wind Farms, Roadway Improvements exceeding map limits above.

Due to system limitations and agency requirements, projects should not be submitted piecemeal. The entire project area including roads and infrastructure should be submitted as a single unit.

What to Send to Jurisdictional Agencies

Send the following information to all of the agencies listed on the Large Project Form.

Check-list of Minimum Materials to be submitted:

- Completed Large Project Form
- Supplemental project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
- USGS 7.5-minute Quadrangle with project boundary clearly indicated, and quad name on the map

The inclusion of the following information may expedite the review process.

- GIS shapefiles depicting the project extent
- A basic site plan (particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
- Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
- Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams

PNDI Large Project Form Definitions

Applicant: Person that owns the property or is proposing the project or activity

Contact Person: Person to receive response if different than applicant (e.g. Consultant)

Project Name: Descriptive title of project (e.g. Twin Pines Subdivision, Miller Bridge Replacement)

Proposed Activity: Include ALL earth disturbance activities for project (e.g. for a timber sale—include stream crossings, cutting areas and new roadway accesses). Also include Current Conditions (e.g. housing, farmland, current land cover), and how Construction/Maintenance Activity is to be accomplished

Total Acres of Property: Entire site acreage (e.g. timber sale property—including road access (200 acres)

Acreage to be Impacted: Disturbance acreage (e.g. timber sale—if the property is 200 acres, but only 100 acres will be disturbed, for example: cutting on 90 acres, a road impacting 10 acres); include all temporary and permanent activities



Pennsylvania Natural Diversity Inventory

LARGE PROJECT FORM

This form provides site information necessary to perform an Environmental Review for special concern species and resources listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, the Pennsylvania Fish and Boat Code or the Pennsylvania Game and Wildlife Code.

Applicant Information

Name: Matt Gordon
Address: 525 Fritztown Rd, Sinking Springs, Pa 19608
Phone Number: 610-670-3284 Fax Number:

Contact Person Information - if different from applicant

Name: Preston Smith
Address: 661 Andersen Drive, Foster Plaza, Pittsburgh, Pa 15220
Phone Number: 412-921-8167 Fax Number: 412-921-4040
Email: preston.smith@tetrattech.com

Project Information

Project Name: Sunoco Mariner East 2 Pipeline
Project Reference Point (center point of project): Latitude: 40.327693° Longitude: -77.814868° Datum: NAD 1983

Municipality: See Attached County: See Attached

Attach a copy of a U.S.G.S. 7 1/2 Minute Quadrangle Map with Project Boundaries clearly marked.
U.S.G.S. Quad Name: See Attached

Provide GIS shapefiles showing the project boundary (strongly recommended)

Project Description

Proposed Project Activity (including ALL earth disturbance areas and current conditions)

The purpose of this project is to install 1-16" natural gas liquid (NGL) pipeline that will carry propane, butane, and natural gasoline (in liquid phase) from Hopedale, Ohio through West Virginia and Pennsylvania, to Claymont, Delaware. The pipeline will travel approximately 314 miles through PA. Construction activities will involve access road installation and improvement, clearing and grubbing within the right of way, trenching, pipe installation, and site restoration. Please see attached project description for additional details.

Total Acres of Property: 4000 Acreage to be Impacted: 4000

1. Will the entire project occur in or on an existing building, parking lot, driveway, road, maintained road shoulder, street, runway, paved area, railroad bed, or maintained lawn? Yes No
2. Are there any waterways or waterbodies (intermittent or perennial rivers, streams, creeks, tributaries, lakes or ponds) in or near the project area, or on the land parcel? If so, how many feet away is the project? Yes Feet No
3. Are wetlands located in or within 300 feet of the project area? Yes No If No, is this the result of a wetland delineation?
4. How many acres of tree removal, tree cutting or forest clearing will be necessary to implement all aspects of this project? Approximately 1700 acres

Dept. of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market St., PO Box 8552
Harrisburg, PA 17105
fax: 717-772-0271

PA Game Commission

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

PA Fish and Boat Commission

Natural Diversity Section
450 Robinson Lane
Bellefonte, PA 16823

US Fish and Wildlife Service

Endangered Species Biologist
315 South Allen St., Suite 322
State College, PA 16801
no faxes please

**SUNOCO MARINER EAST 2 PIPELINE
LARGE PROJECT PNDI
PROJECT DESCRIPTION**

Sunoco Pipeline, L.P. (SPLP) proposes the Mariner East 2 Pipeline Project (ME2), an approximately 350-mile long, 16-inch diameter natural gas liquid (NGL) pipeline that will transport propane, butane, and natural gasoline (in liquid phase) from Scio, Ohio through West Virginia and Pennsylvania to Claymont, Delaware. The pipeline will travel approximately 314 miles through Pennsylvania, starting approximately at LAT: 40D 14M 4.68S, LONG: -80D 31M 8.83S and ending at approximately LAT: 39D 49M 18.39S, LONG: -75D 25M 33.55S. The proposed pipeline construction right-of-way (ROW) will be 75 to 100 feet in width and will parallel an existing Sunoco pipeline throughout the majority of its length in Pennsylvania.

Within Pennsylvania, ME2 will cross Washington, Allegheny, Westmoreland, Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland, York, Dauphin, Lebanon, Lancaster, Berks, Chester, and Delaware counties. ME2 will cross the following U.S.G.S 7.5 Minute Quadrangles in PA:

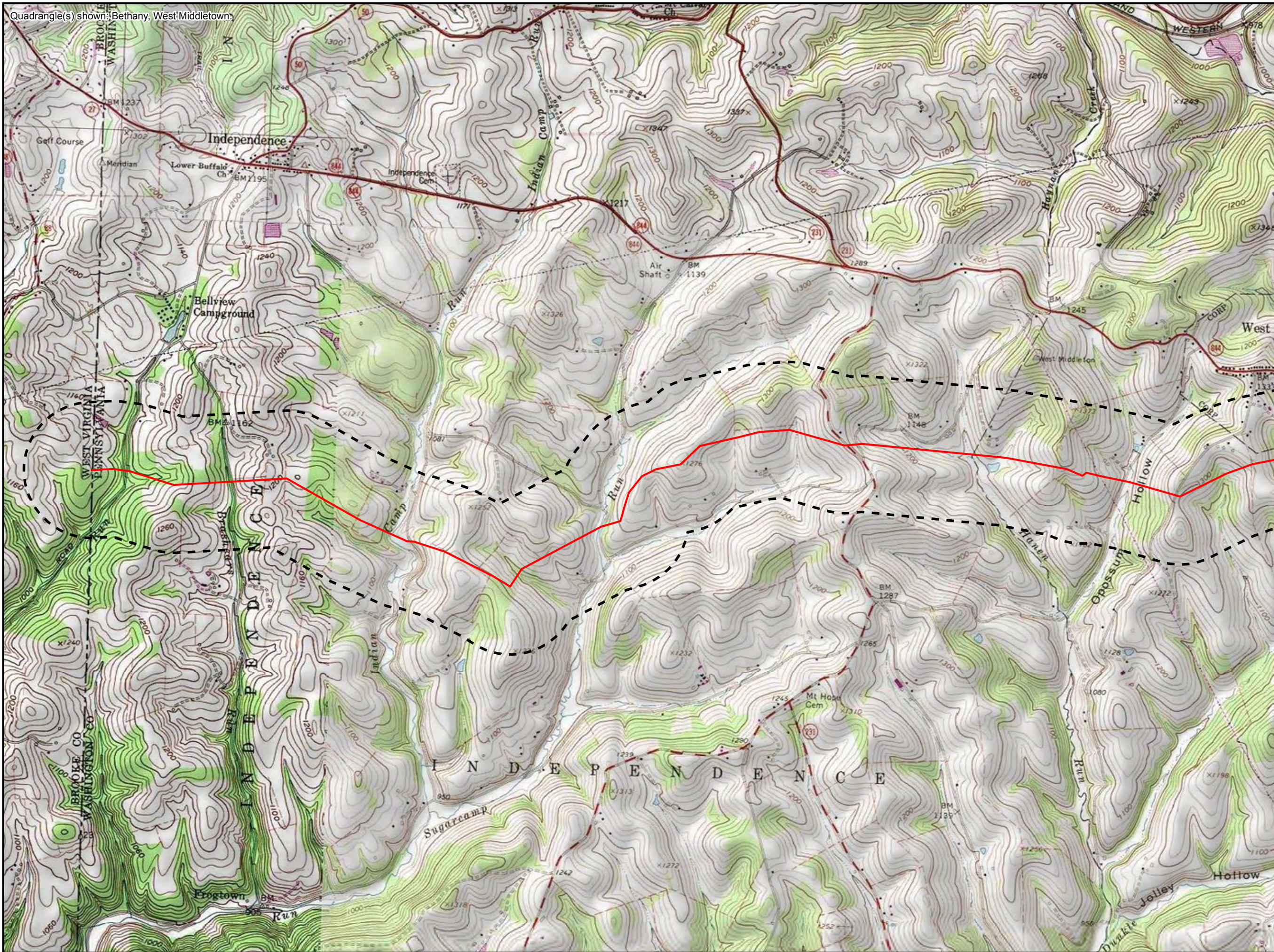
	Blairsville	Blairs Mills	Womelsdorf
Bethany	Bolivar	Blain	Sinking Spring
West Middletown	New Florence	Andersonburg	Reading
Midway	Vintondale	Newville	Morgantown
Washington West	Nanty Glo	Plainfield	Elverson
Washington East	Ebensburg	Carlisle	Wagontown
Hackett	Cresson	Mechanicsburg	Downingtown
Monongahela	Holidaysburg	Lemoyne	Malvern
Donora	Frankstown	Steelton	West Chester
Smithton	Williamsburg	Middletown	Media
Irwin	Huntington	Elizabethtown	Marcus Hook
Murraysville	Cassville	Palmyra	
Slickville	Butler Knob	Lebanon	
Saltsburg	Augwick	Richland	

The project will disturb approximately 4,000 acres within Pennsylvania, which is included within the 1500 foot buffer surrounding the proposed project area, as shown on Figures 1 to 57. Please screen the entire buffer to account for potential shifts in the alignment and proposed access roads. Past and present land use of the project area and surrounding area includes agricultural, forested, residential, commercial, and industrial. The overall limit of disturbance and project length are subject to change based on small shifts within the buffer. Future land use will be a maintained, vegetated pipeline right-of-way.

Construction activities will involve access road installation and improvement, clearing and grubbing within the right-of-way, trenching, pipe installation, and site restoration. Erosion and sediment controls will be in place during earth disturbance activities. Following completion of pipeline installation, the area will be returned to the general grade present prior to pipeline installation in order to maintain preconstruction elevations and drainage patterns. Disturbed areas will be seeded and mulched. Erosion and sedimentation control devices will be maintained until site work is complete and revegetation is successful.

The PADEP permits required for this project include Chapter 105 Water Obstruction and Encroachment Permits and an Erosion and Sediment Control General Permit (ESCGP-2).

Quadrangle(s) shown: Bethany, West Middletown



Legend
 [Dashed Line] 1500 ft Buffer

Sheet Identifier

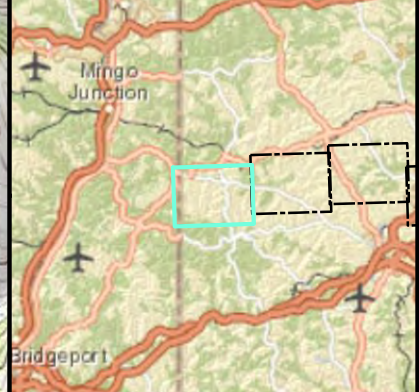


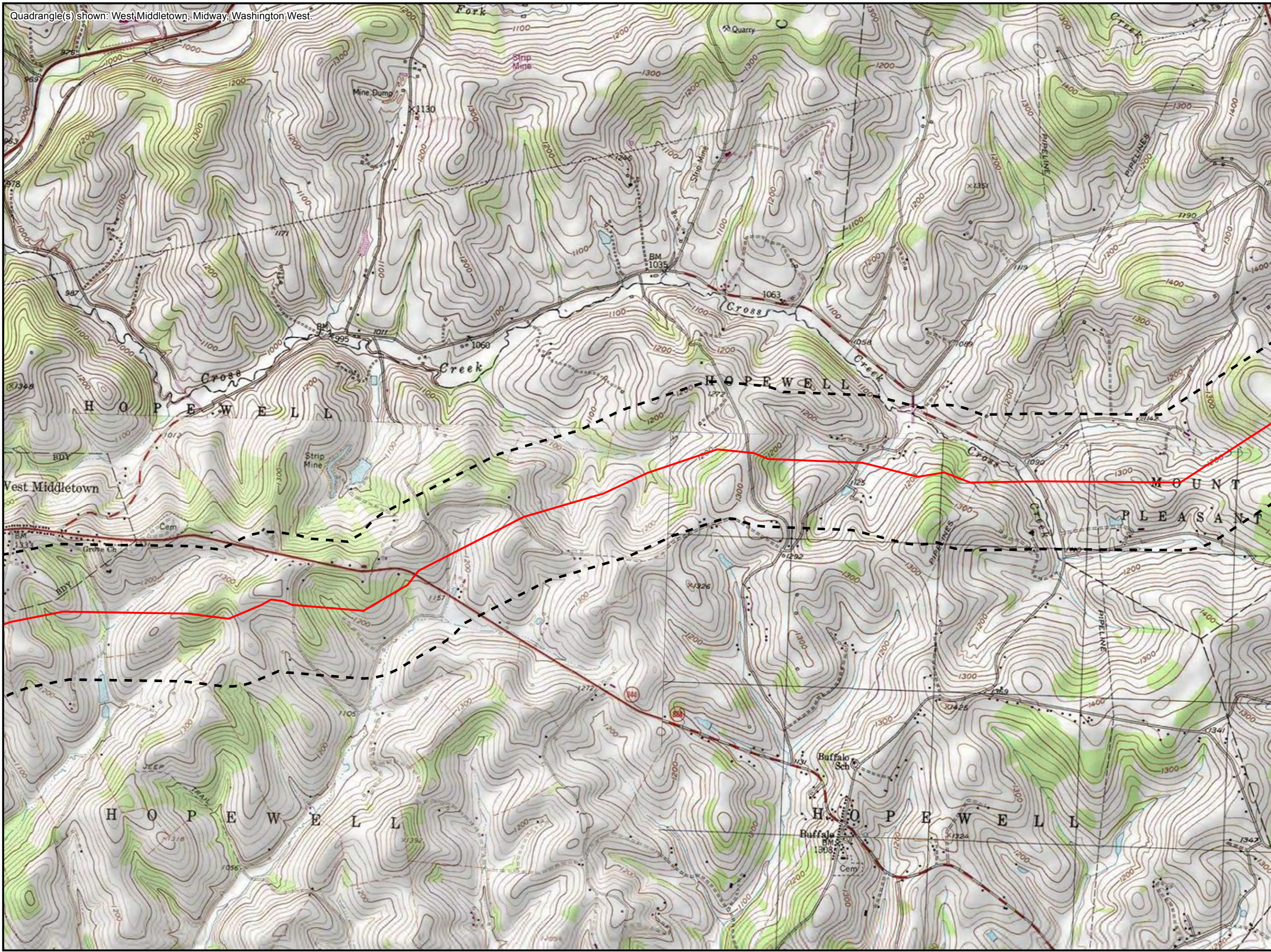
FIGURE 1
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WASHINGTON COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA\MXD 11/20/13 JN

Quadrangle(s) shown: West Middletown, Midway, Washington, West.



Legend
 1500 ft Buffer

Sheet Identifier

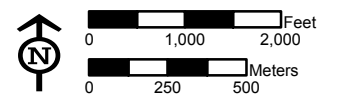
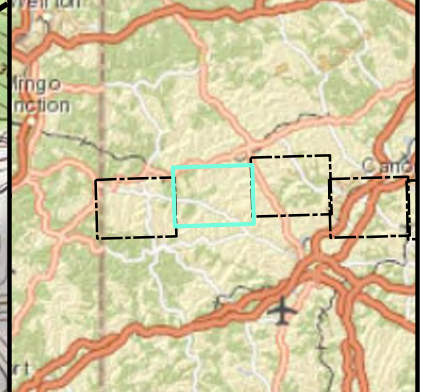


FIGURE 2
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WASHINGTON COUNTY, PA



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 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Midway, Washington East, Washington West



Legend
 1500 ft Buffer

Sheet Identifier

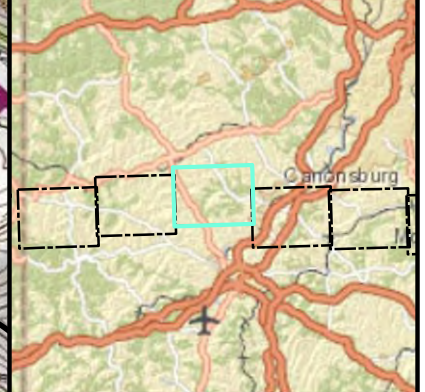


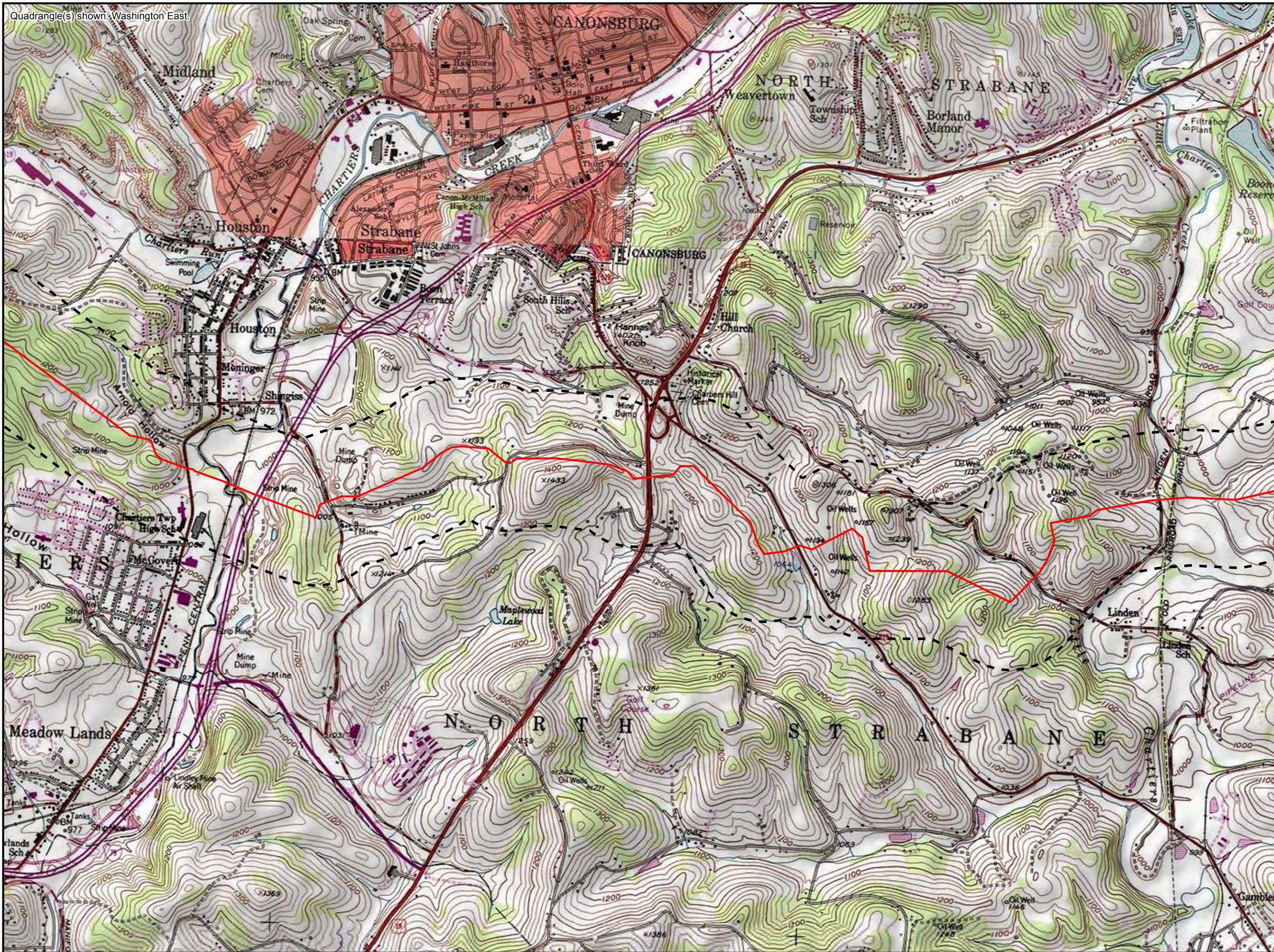
FIGURE 3
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WASHINGTON COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MIDMARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Washington East.



Legend
 [Dashed Line] 1500 ft Buffer

Sheet Identifier

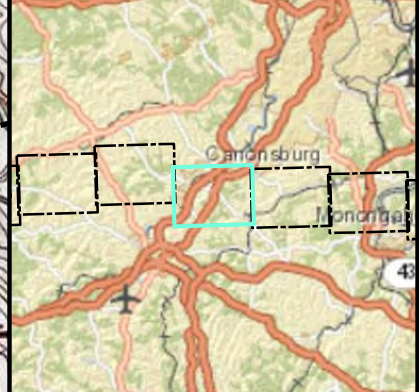


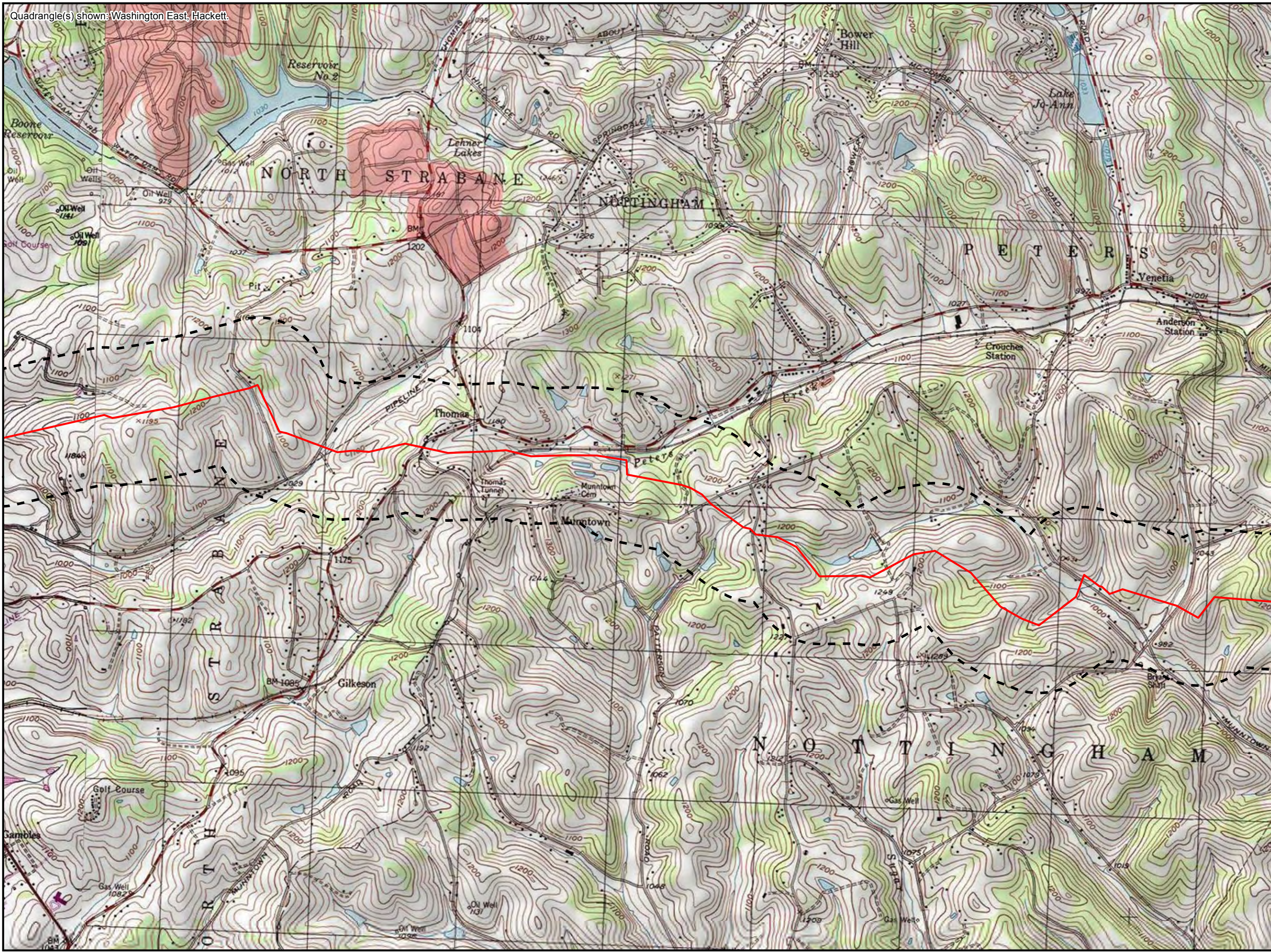
FIGURE 4
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WASHINGTON COUNTY, PA



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PGH_PGISUNOCOMARINER_EAST_2MIXMARNEREST2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Washington East, Hackett.



Legend
 1500 ft Buffer

Sheet Identifier

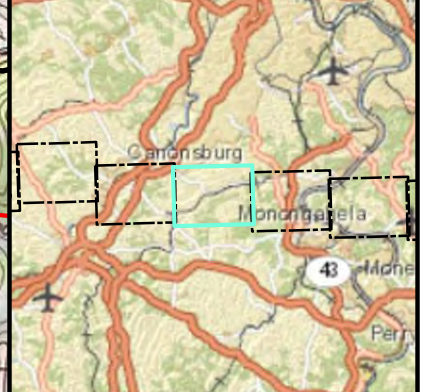


FIGURE 5
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WASHINGTON COUNTY, PA



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PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Hackett, Monongahela.



Legend
 1500 ft Buffer

Sheet Identifier

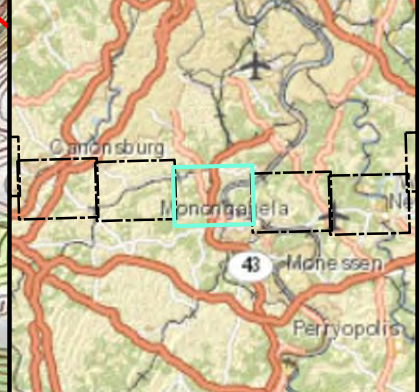


FIGURE 6
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WASHINGTON, ALLEGHENY COUNTY, PA



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PGH_PGISUNOCOMARINER_EAST_2MIXDIMARINER_EAST2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Monongahela, Donora.



Legend
 1500 ft Buffer

Sheet Identifier

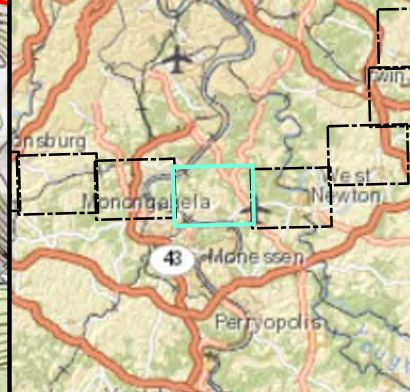


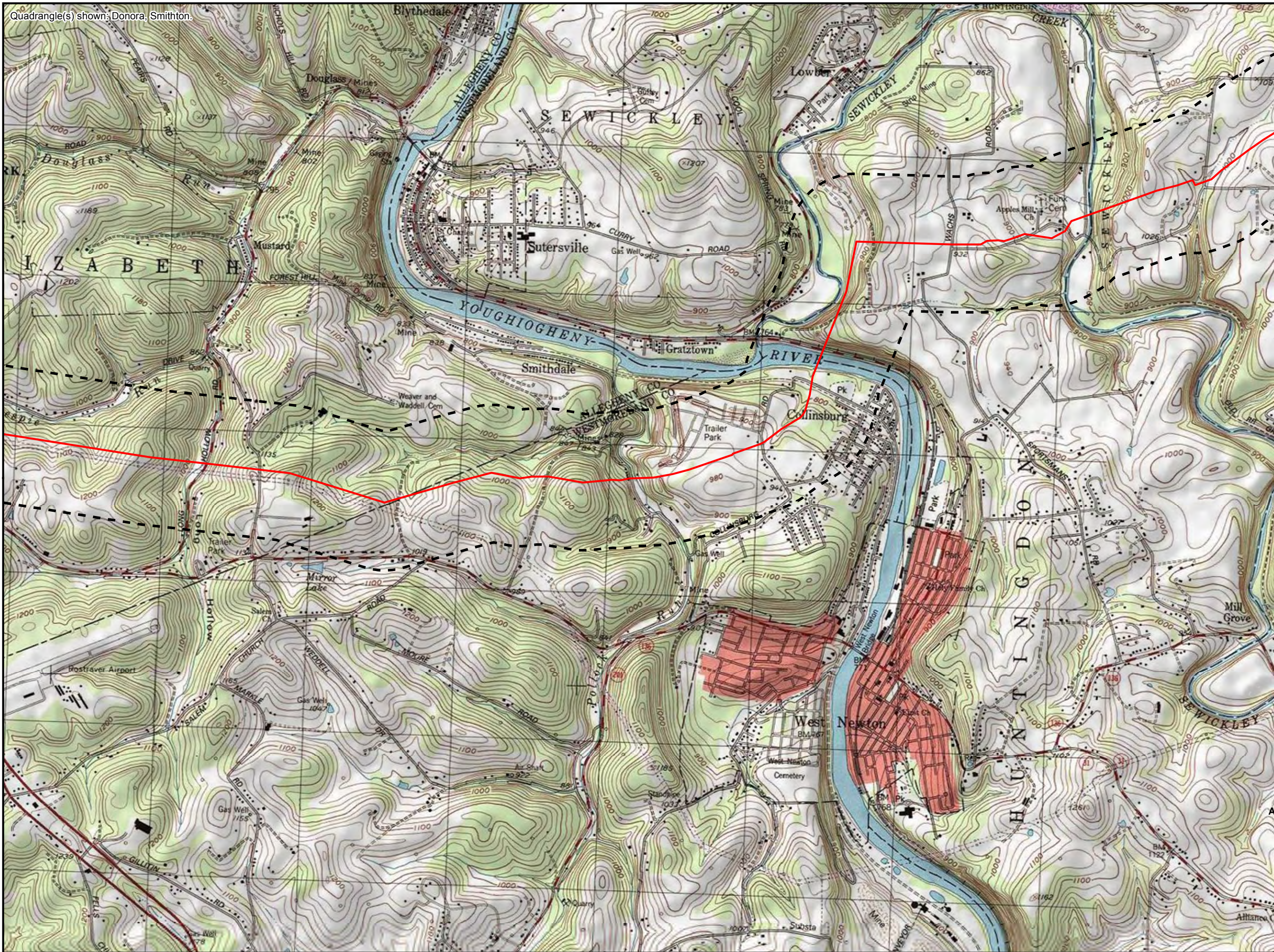
FIGURE 7
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
ALLEGHENY COUNTY, PA



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Quadrangle(s) shown: Donora, Smithton.



Legend
 1500 ft Buffer

Sheet Identifier

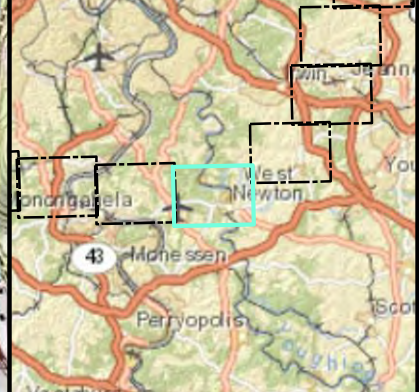


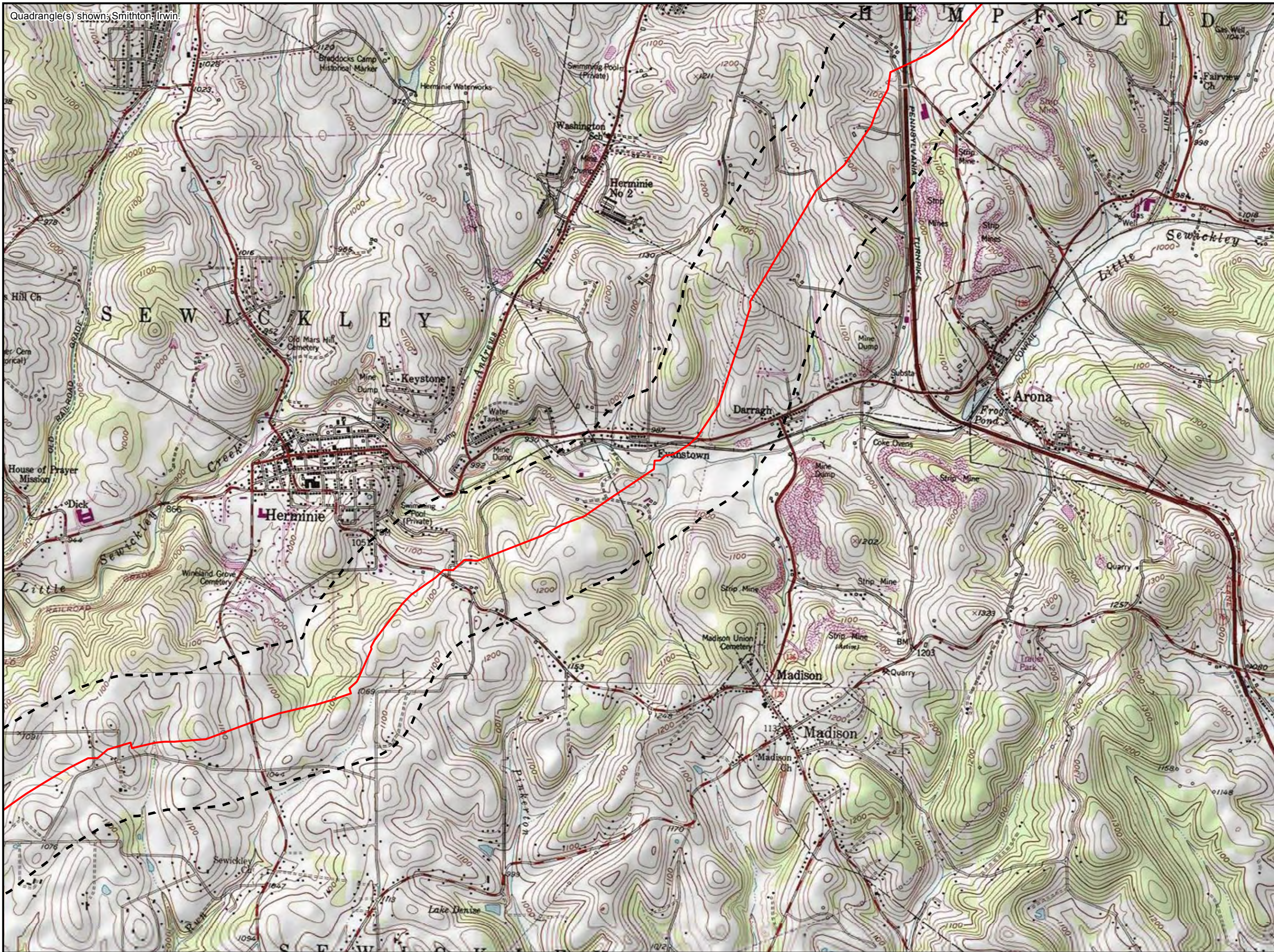
FIGURE 8
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
ALLEGHENY, WESTMORELAND COUNTY, PA



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 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER_EAST2_PNDI_PA\MXD_112013_13

Quadrangle(s) shown; Smithton; Irwin.



Legend
1500 ft Buffer

Sheet Identifier

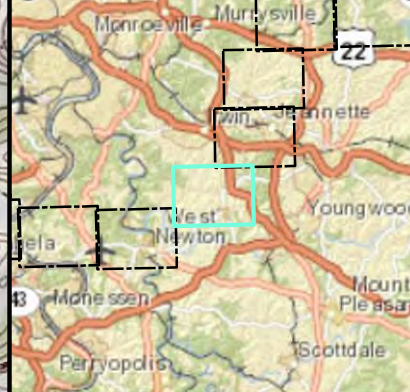


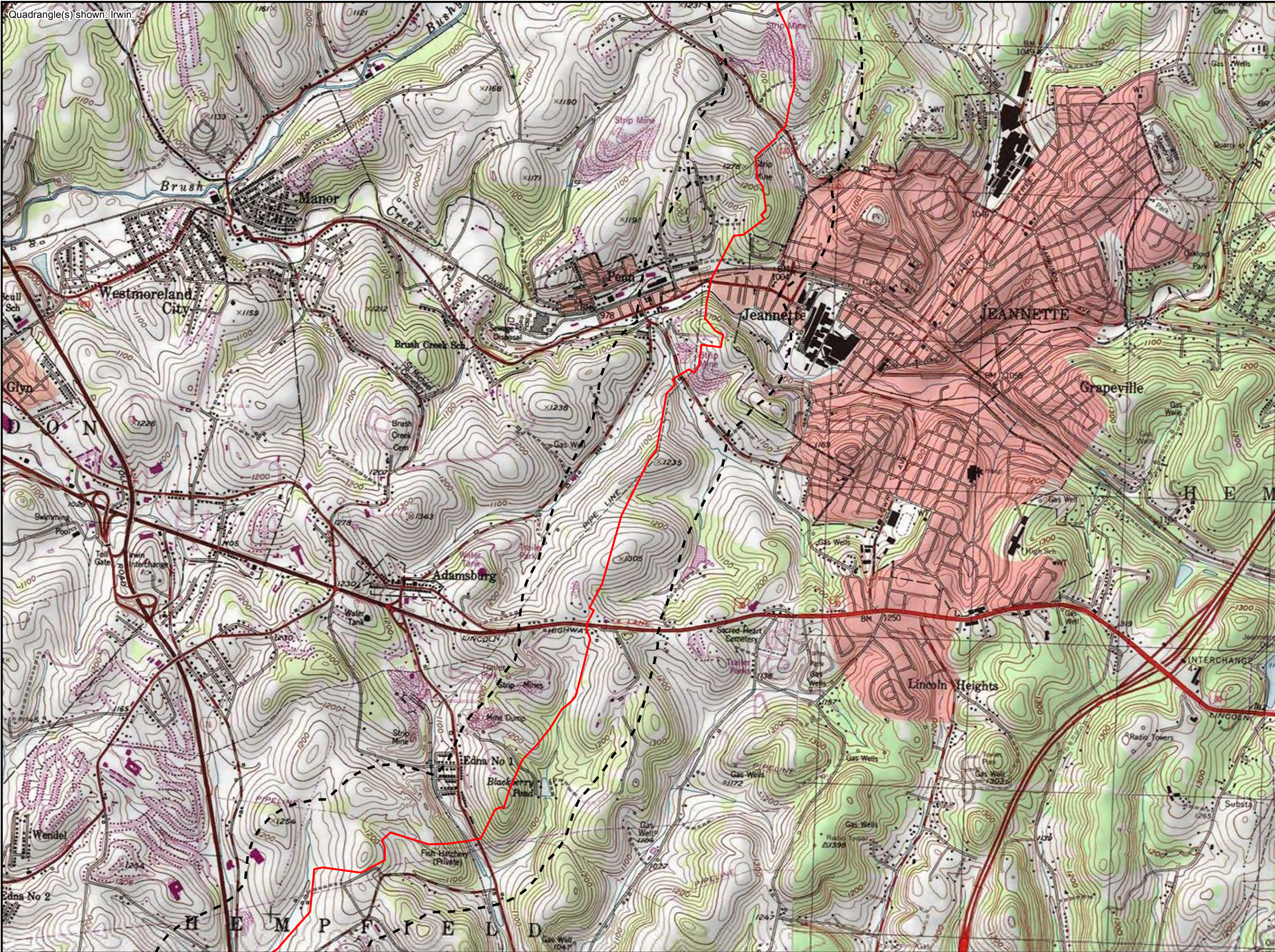
FIGURE 9
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WESTMORELAND COUNTY, PA



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PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Irwin.



Legend
 1500 ft Buffer

Sheet Identifier

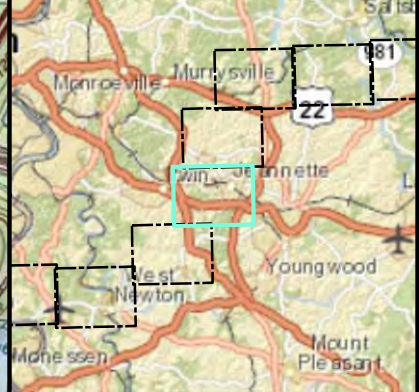


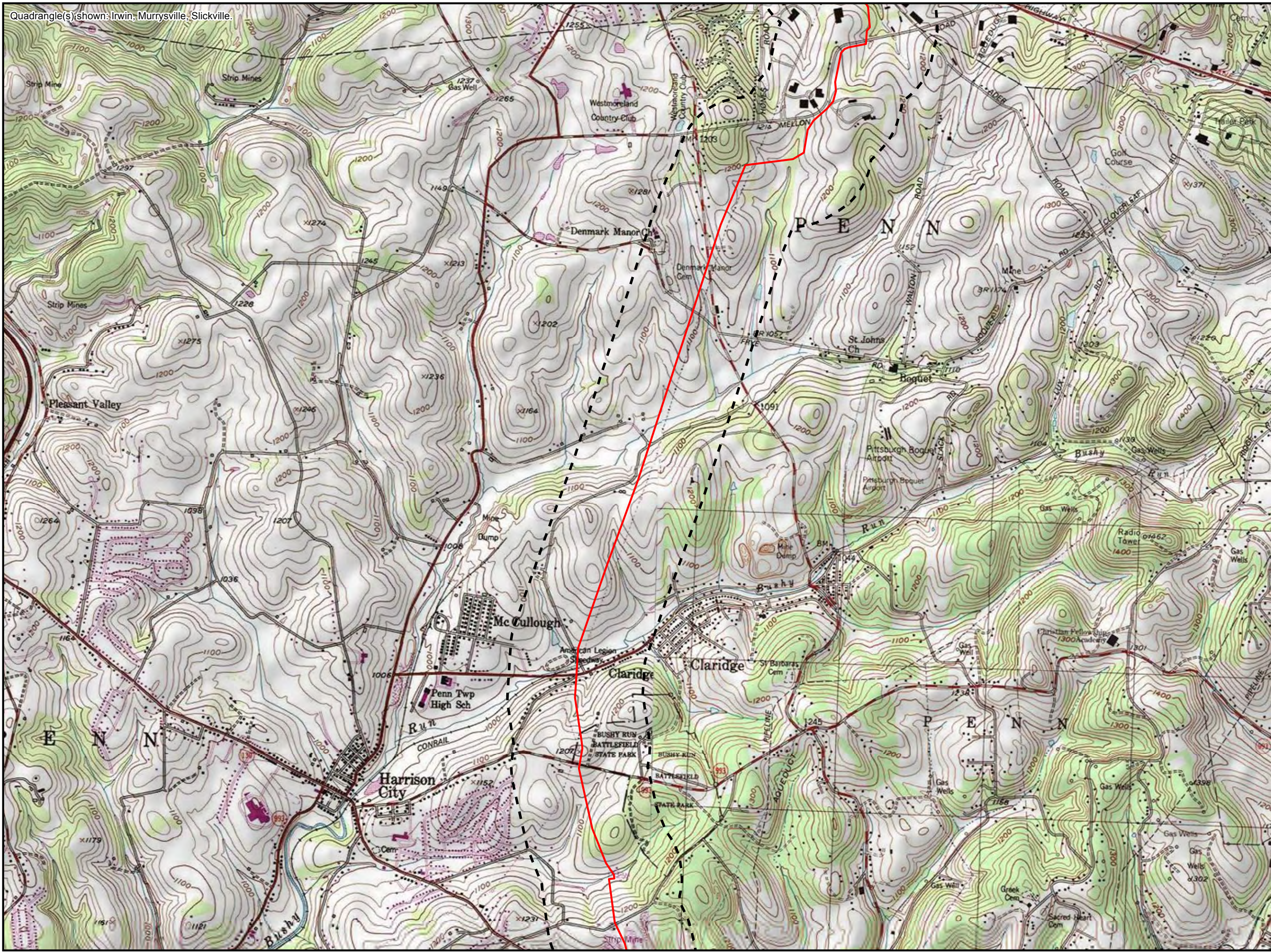
FIGURE 10
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WESTMORELAND COUNTY, PA



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PGH_PGISUNOCOMARINEREAST2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Irwin, Murrysville, Slickville.



Legend
1500 ft Buffer

Sheet Identifier

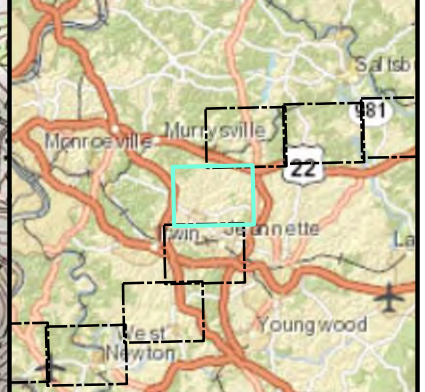


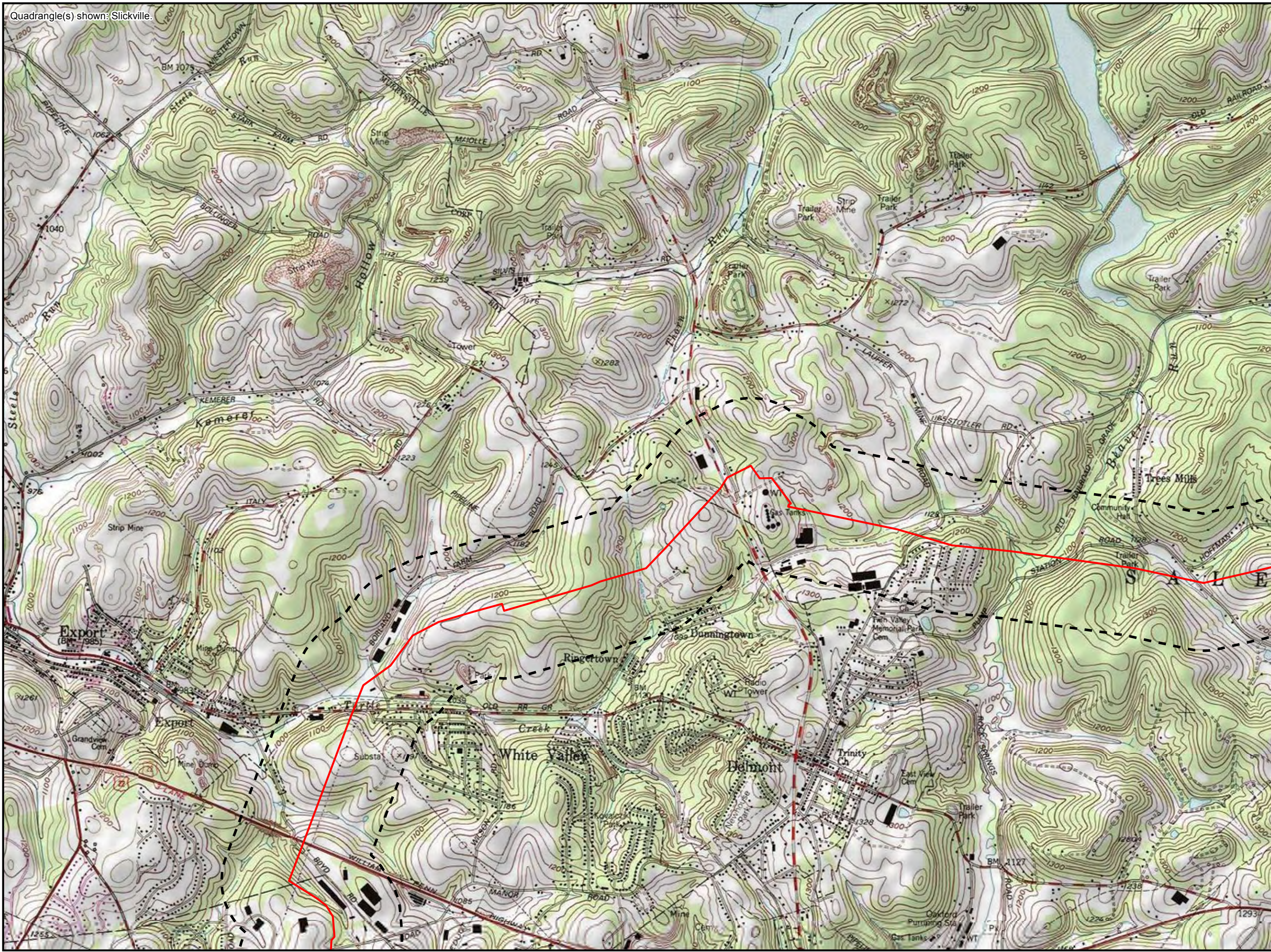
FIGURE 11
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WESTMORELAND COUNTY, PA



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PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Slickville.



Legend
 [Dashed Line] 1500 ft Buffer

Sheet Identifier

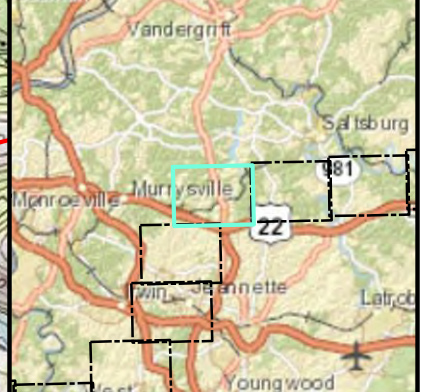


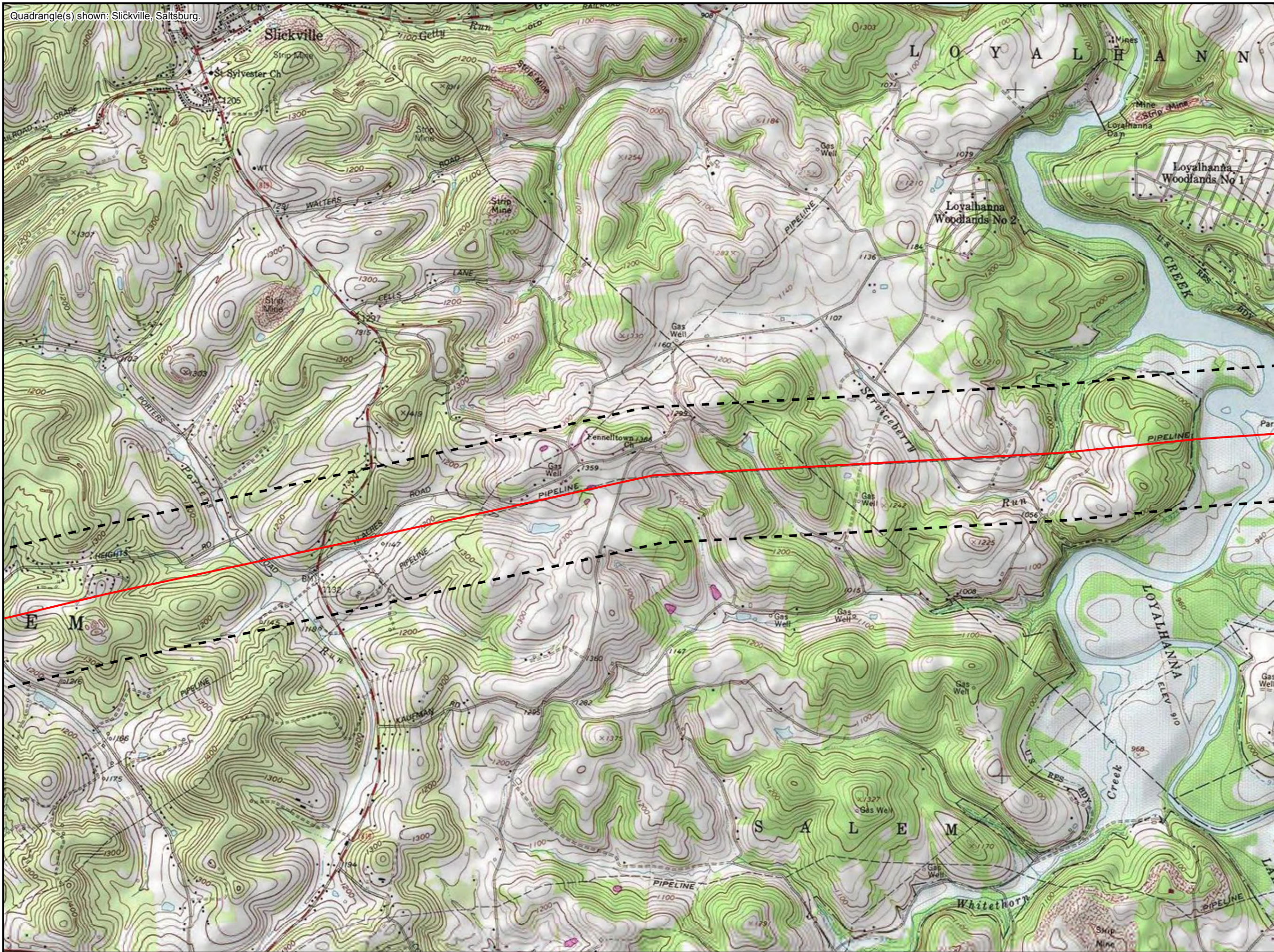
FIGURE 12
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WESTMORELAND COUNTY, PA



Notes:
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PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Slickville, Saltsburg.



Legend
 1500 ft Buffer

Sheet Identifier

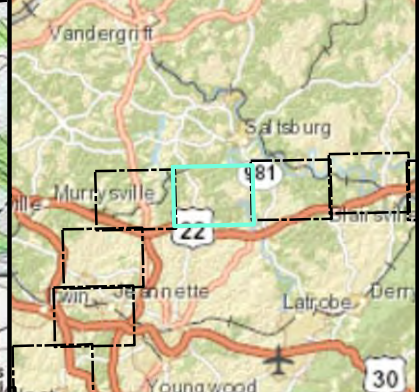


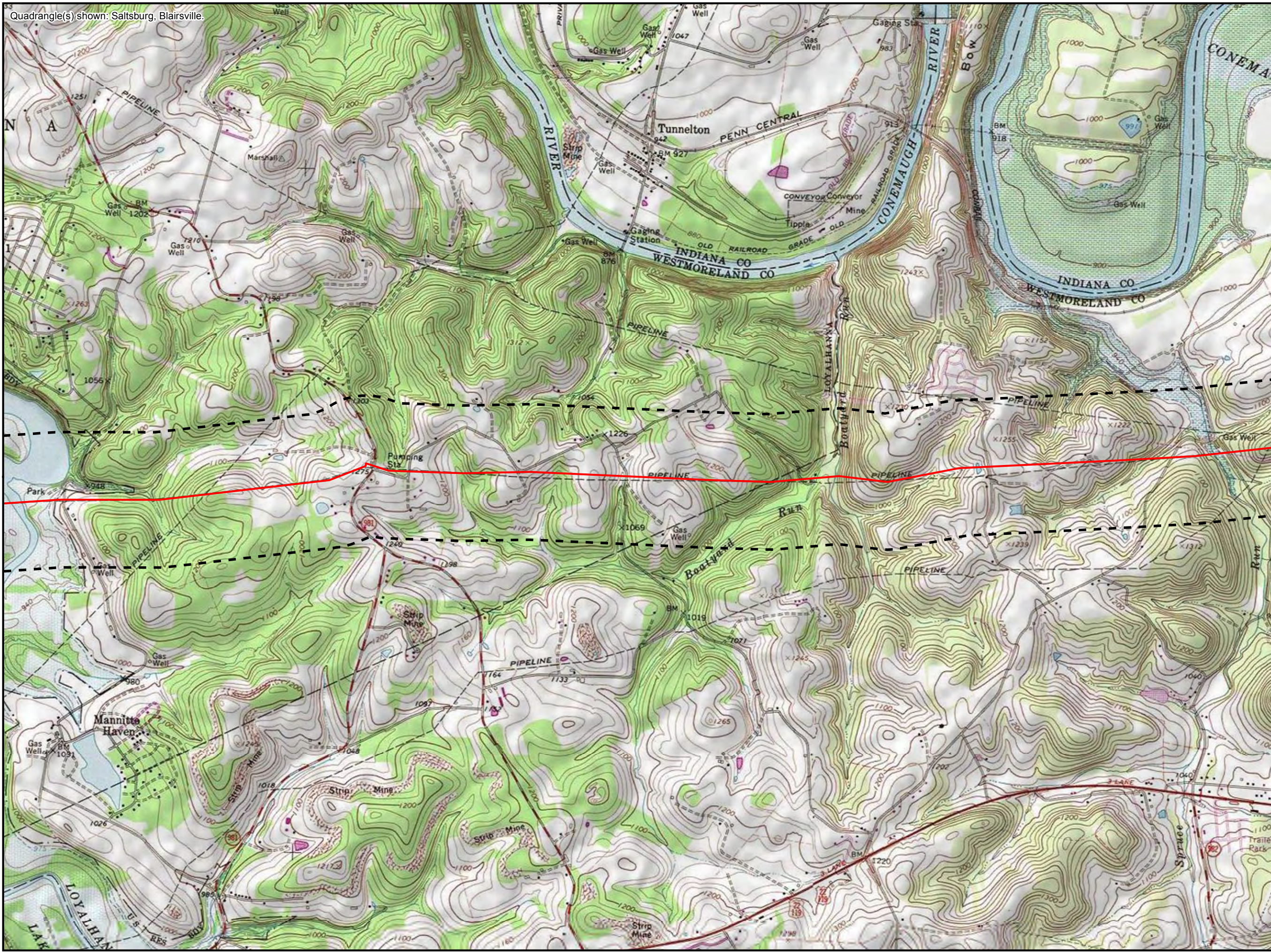
FIGURE 13
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WESTMORELAND COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Saltsburg, Blairsville.



Legend
1500 ft Buffer

Sheet Identifier

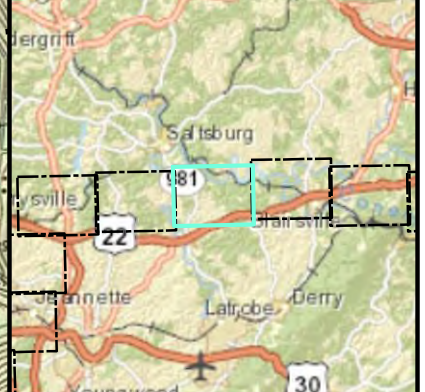


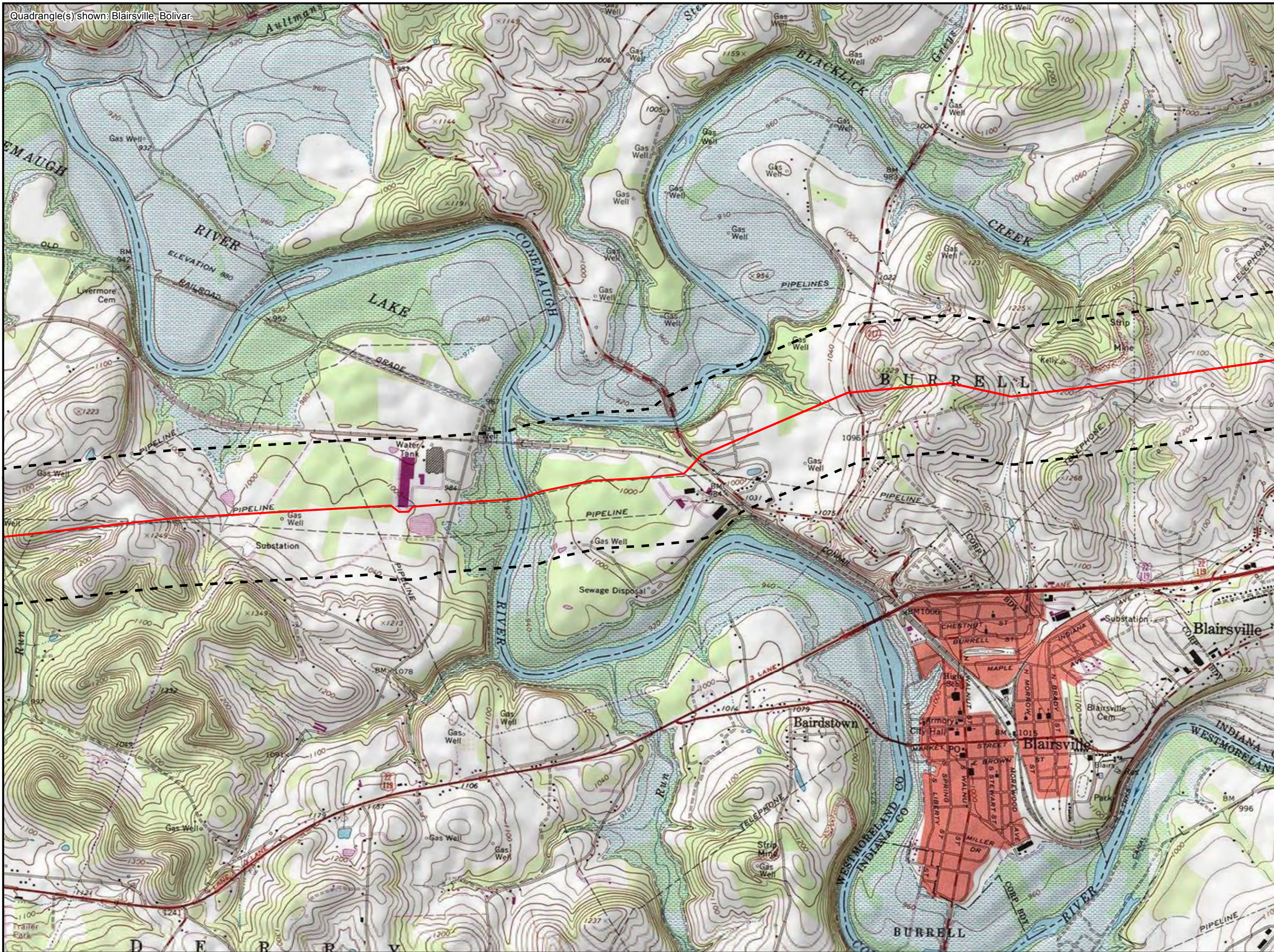
FIGURE 14
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WESTMORELAND COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Blairsville, Bolivar.



Legend
 1500 ft Buffer

Sheet Identifier

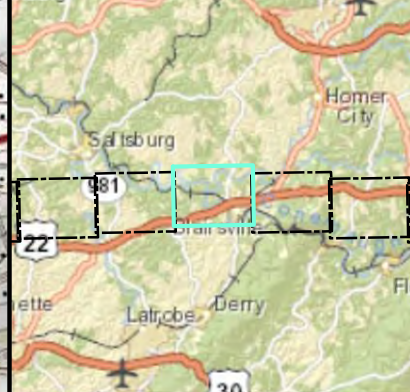


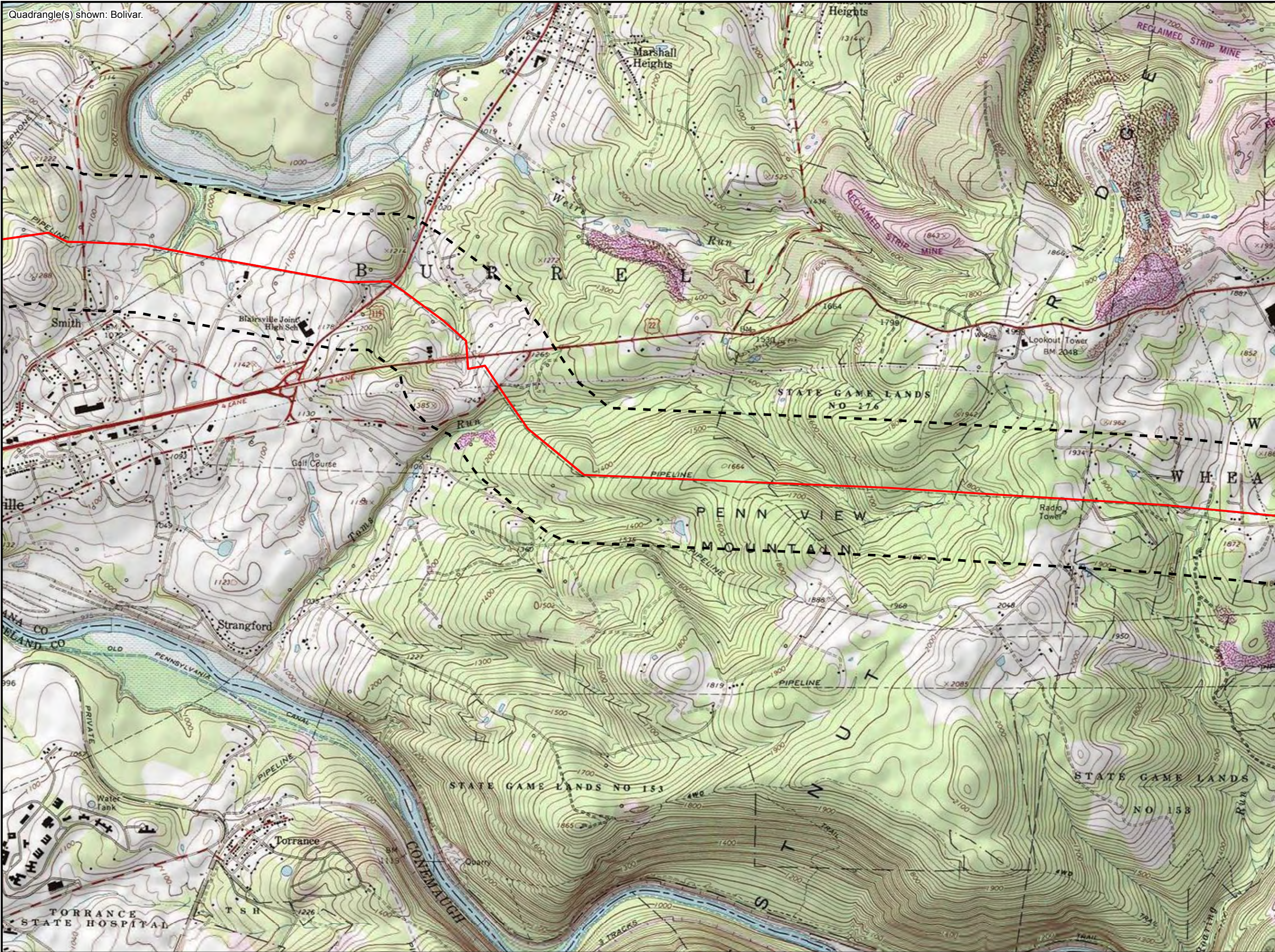
FIGURE 15
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
WESTMORELAND, INDIANA COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PAMXD 11/20/13 JN

Quadrangle(s) shown: Bolivar.



Legend
1500 ft Buffer

Sheet Identifier

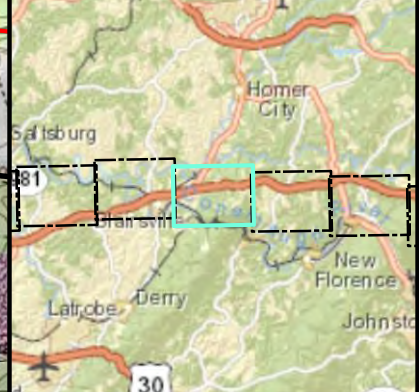


FIGURE 16
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA



Notes:
1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Bolivar, New Florence.



Legend
 1500 ft Buffer

Sheet Identifier

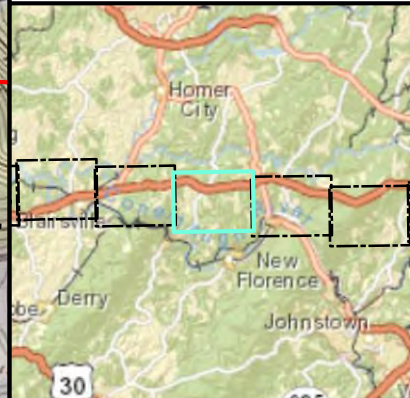


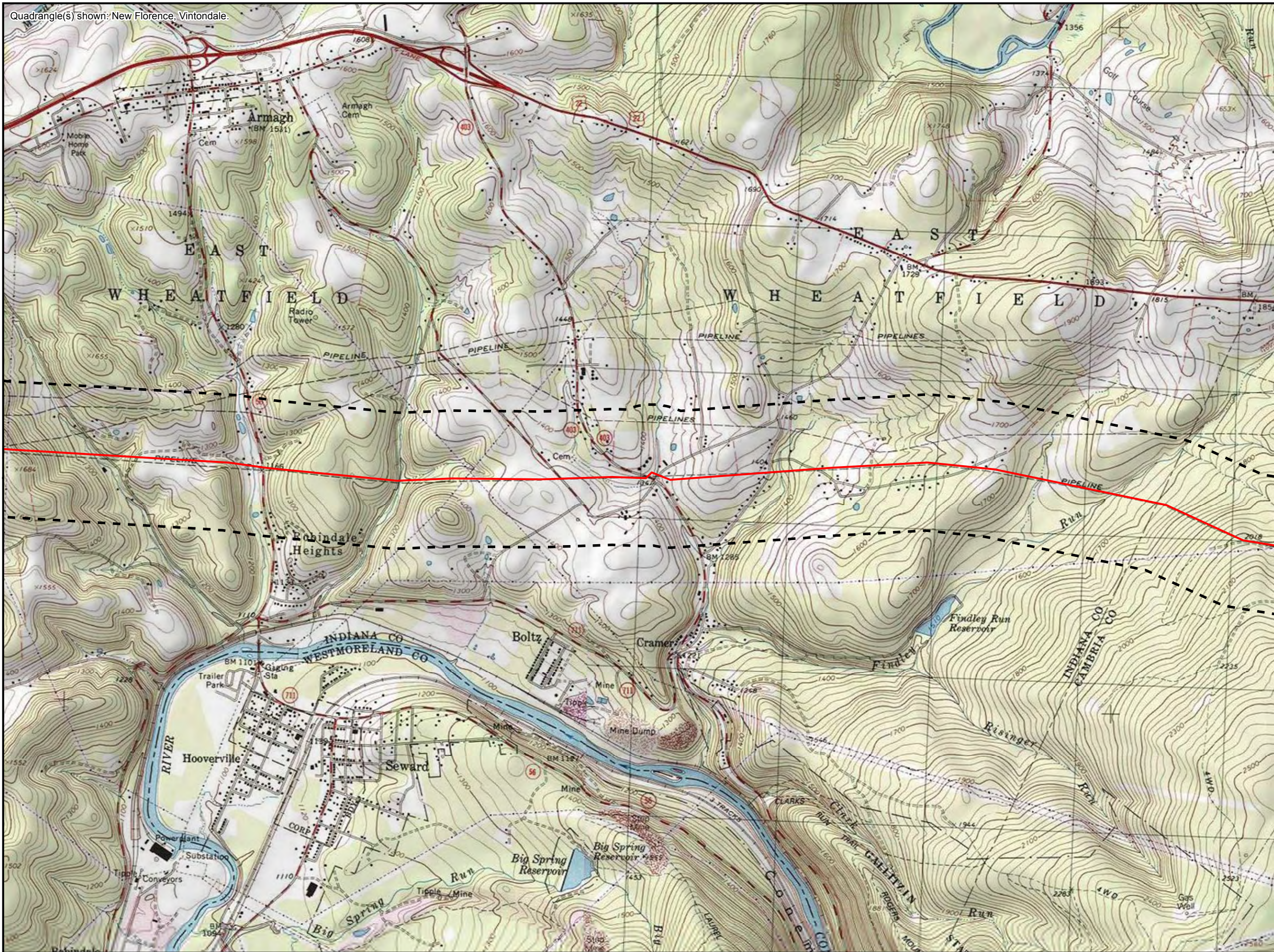
FIGURE 17
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: New Florence, Vintondale.



Legend
 [Dashed Line] 1500 ft Buffer

Sheet Identifier

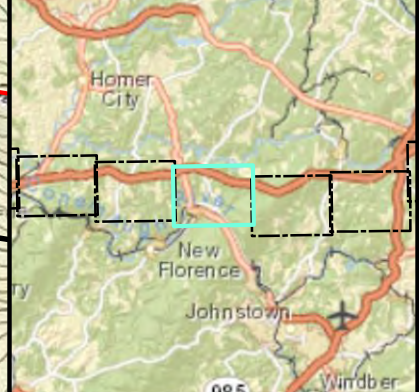


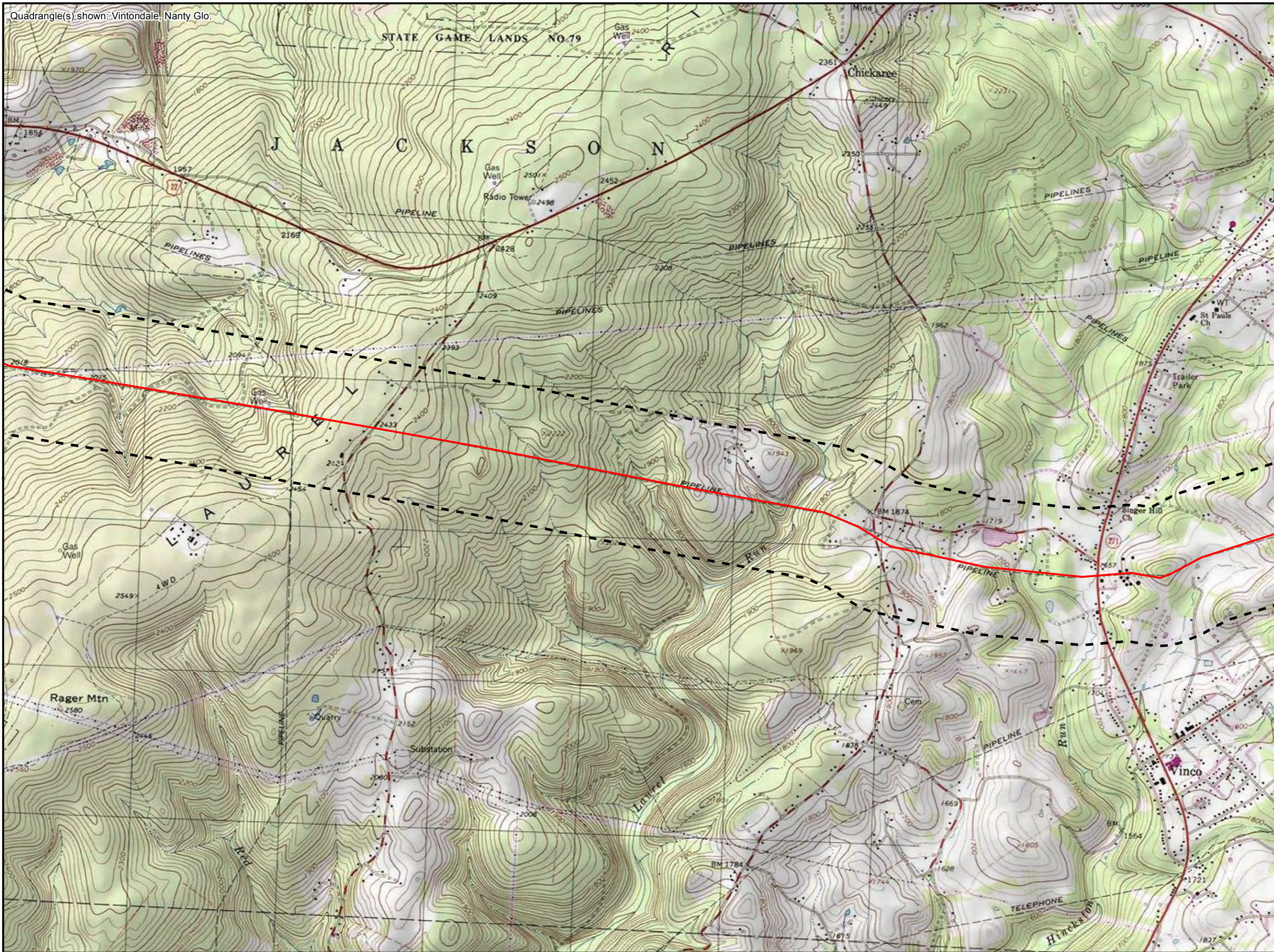
FIGURE 18
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
INDIANA COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Vintondale, Nanty Glo.



Legend
 1500 ft Buffer

Sheet Identifier

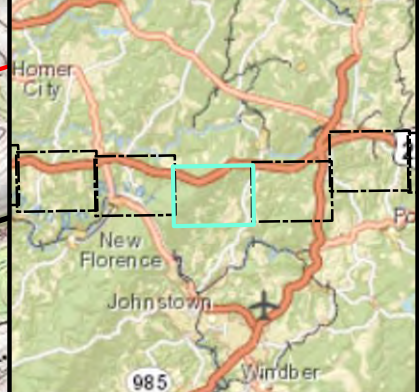


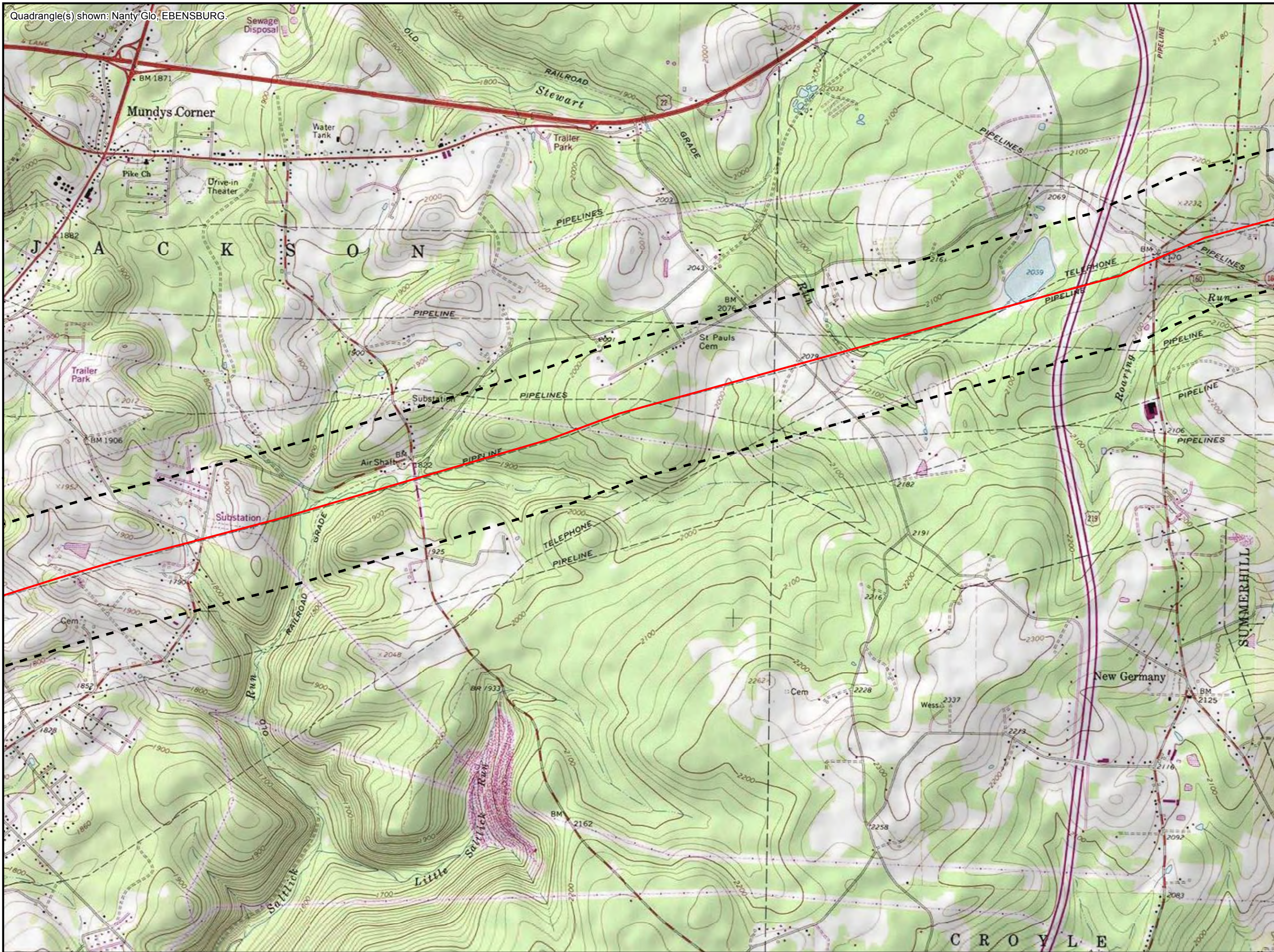
FIGURE 19
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXPNDI_MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Nanty Glo, EBENSBURG.



Legend
 1500 ft Buffer

Sheet Identifier

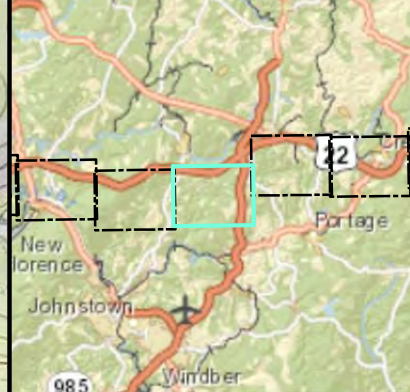


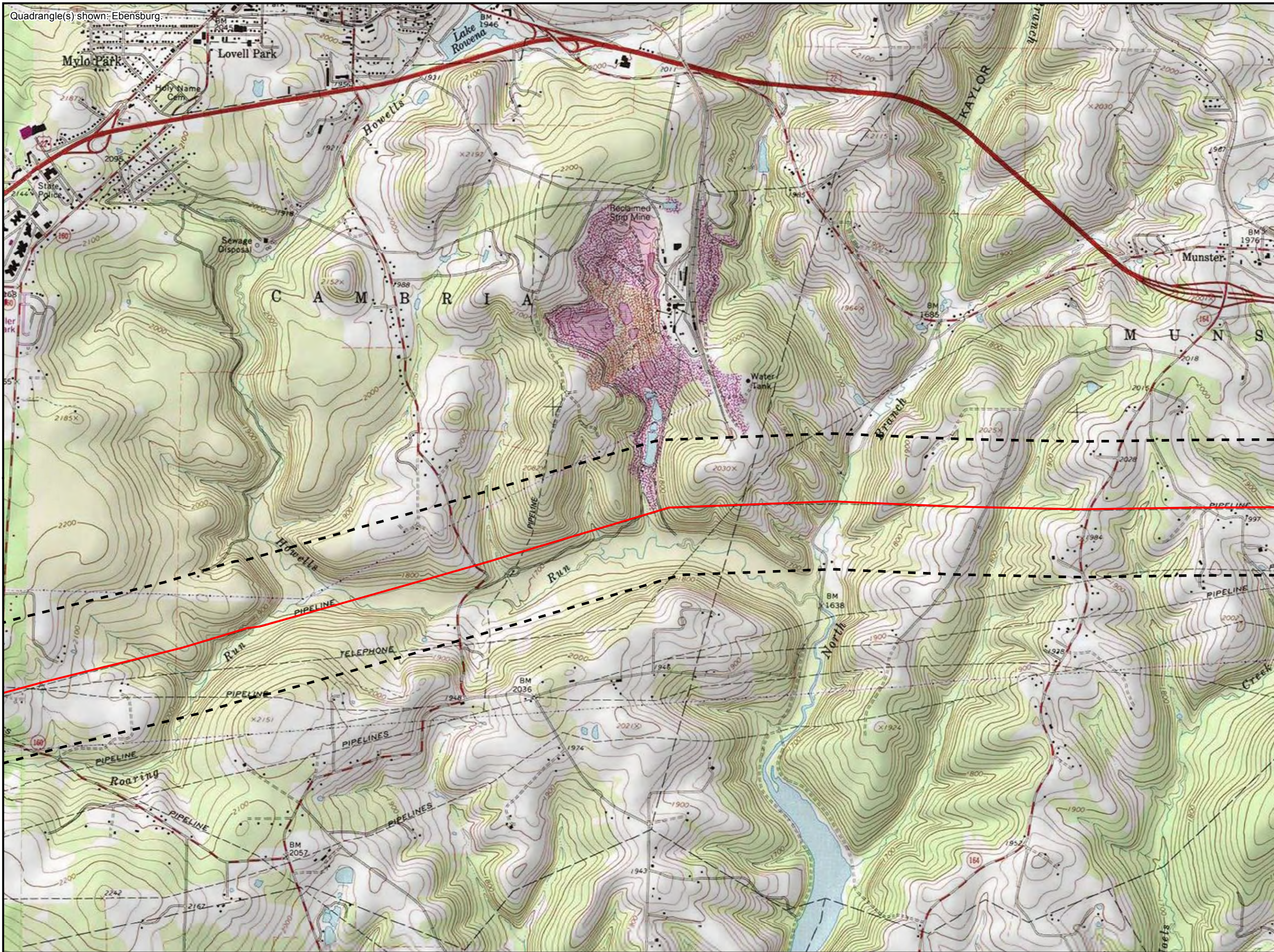
FIGURE 20
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA



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 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Ebensburg.



Legend
 1500 ft Buffer

Sheet Identifier

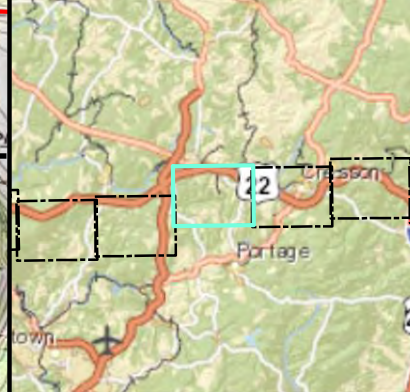


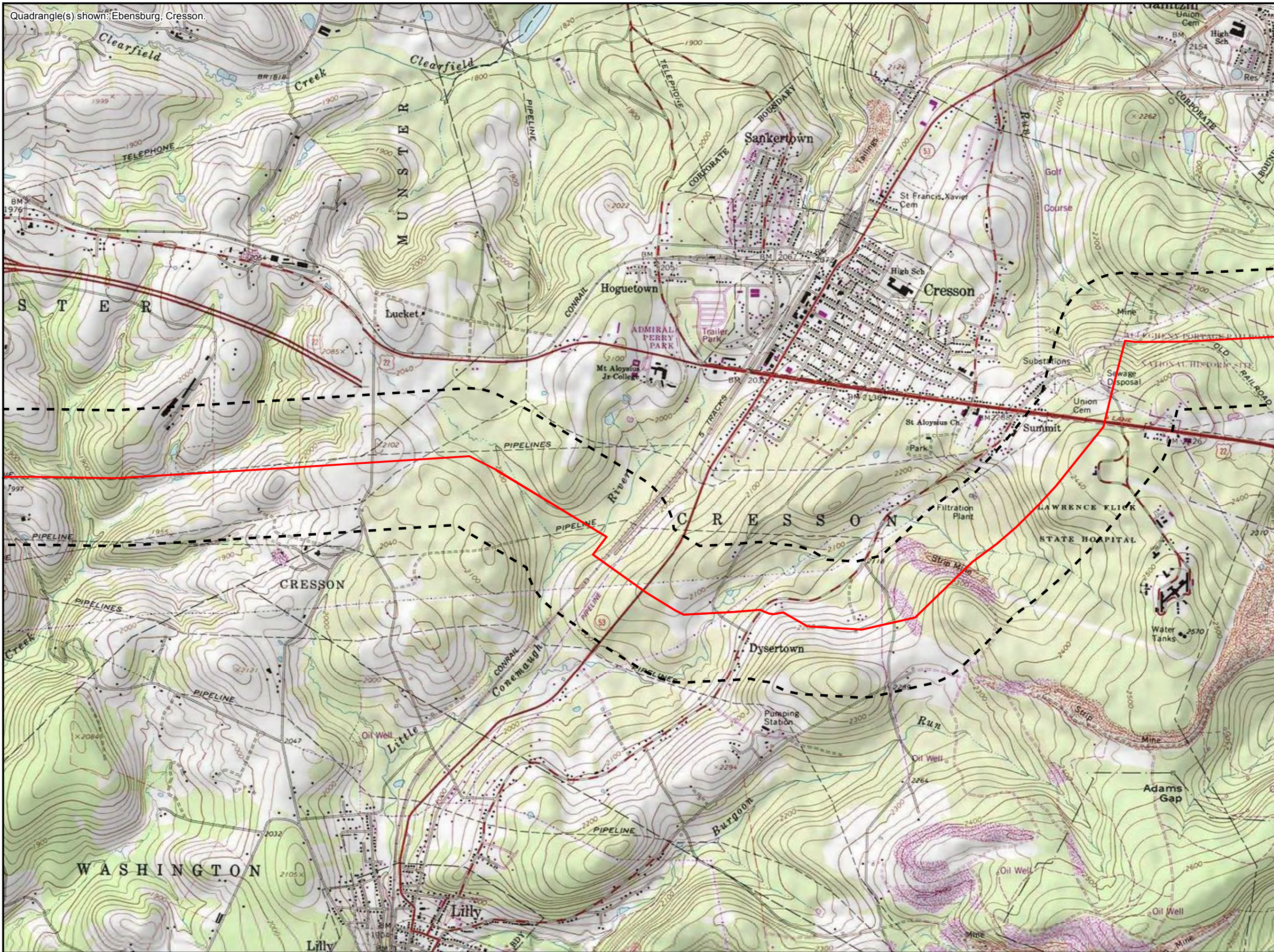
FIGURE 21
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA



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 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Ebensburg, Cresson.



Legend
 1500 ft Buffer

Sheet Identifier

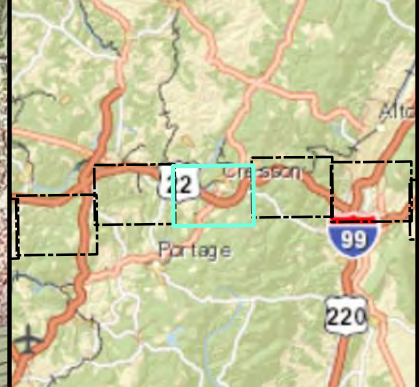


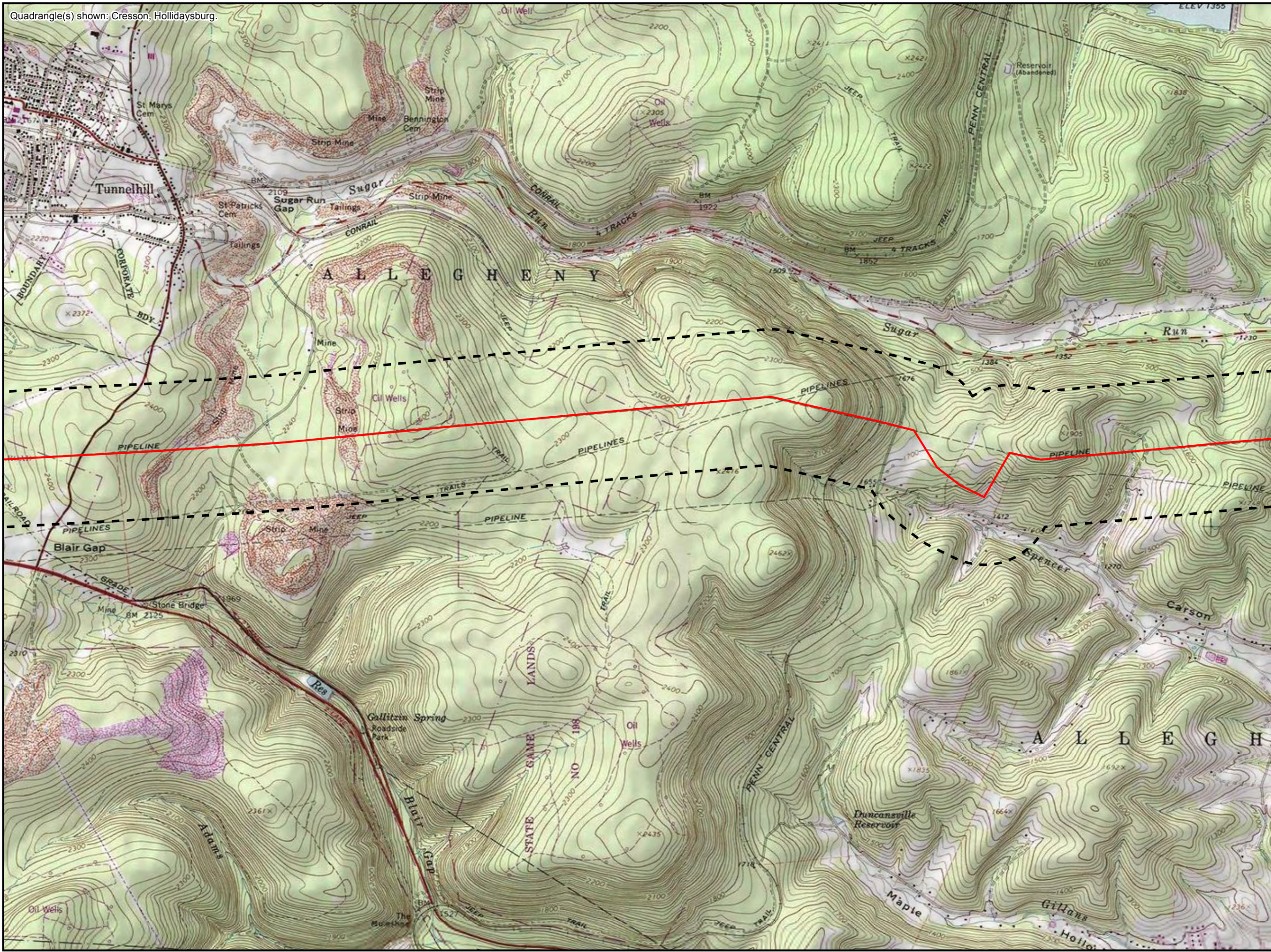
FIGURE 22
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CAMBRIA COUNTY, PA



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 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Cresson, Hollidaysburg.



Legend
 1500 ft Buffer

Sheet Identifier

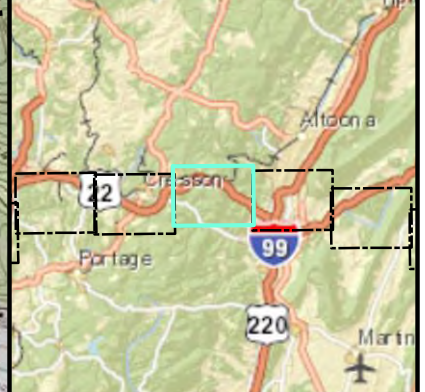


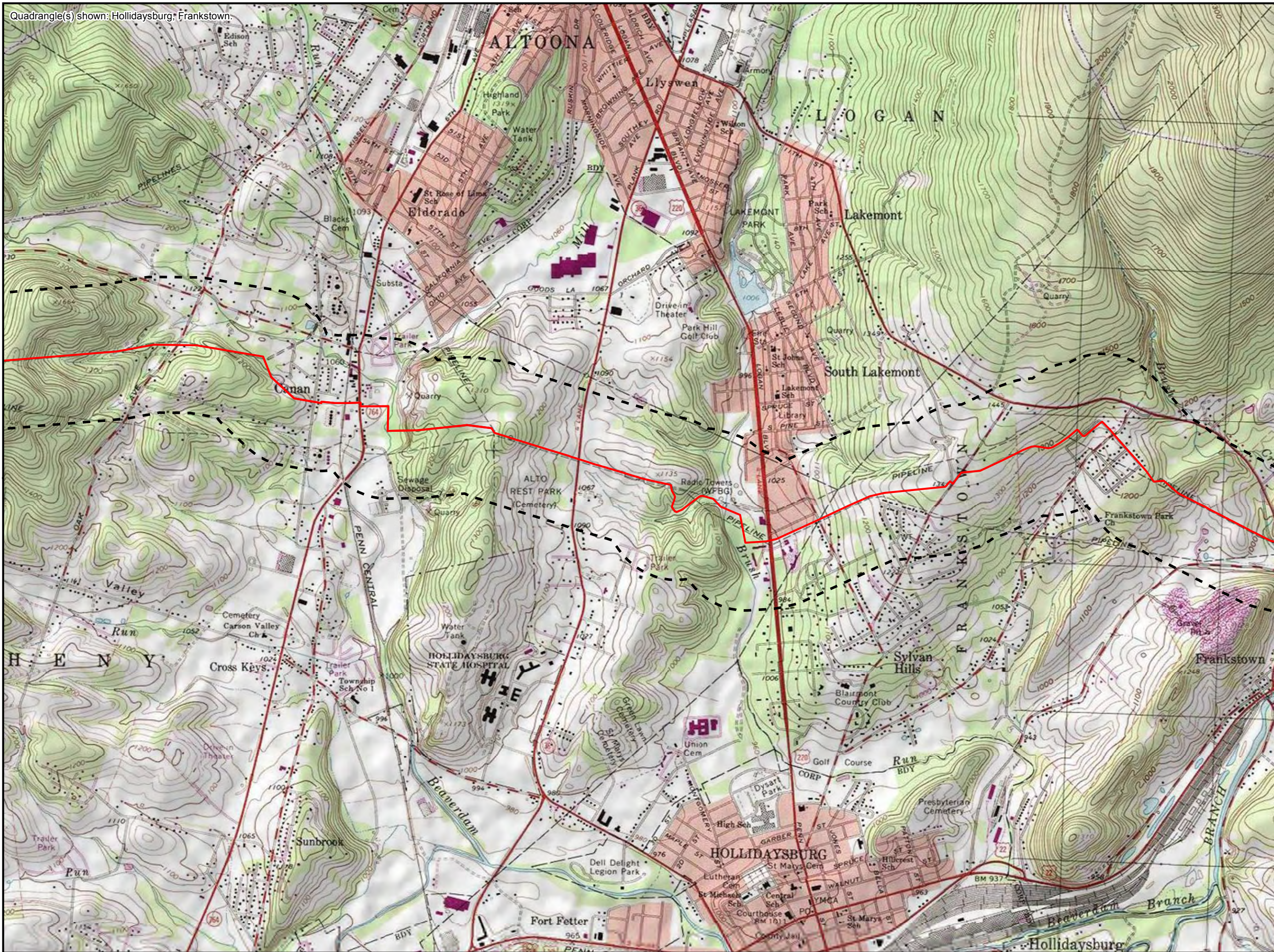
FIGURE 23
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CAMBRIA, BLAIR COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXPNDI_MARINER_EAST_2_PNDI_PA_MXD_11/20/13_JN

Quadrangle(s) shown: Hollidaysburg, Frankstown.



Legend
 1500 ft Buffer

Sheet Identifier

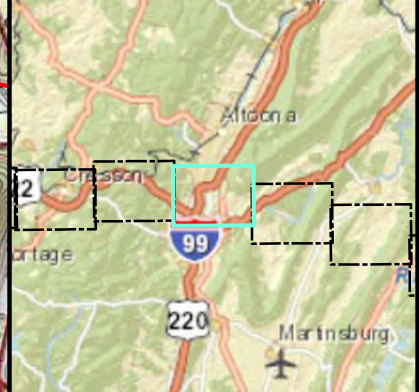


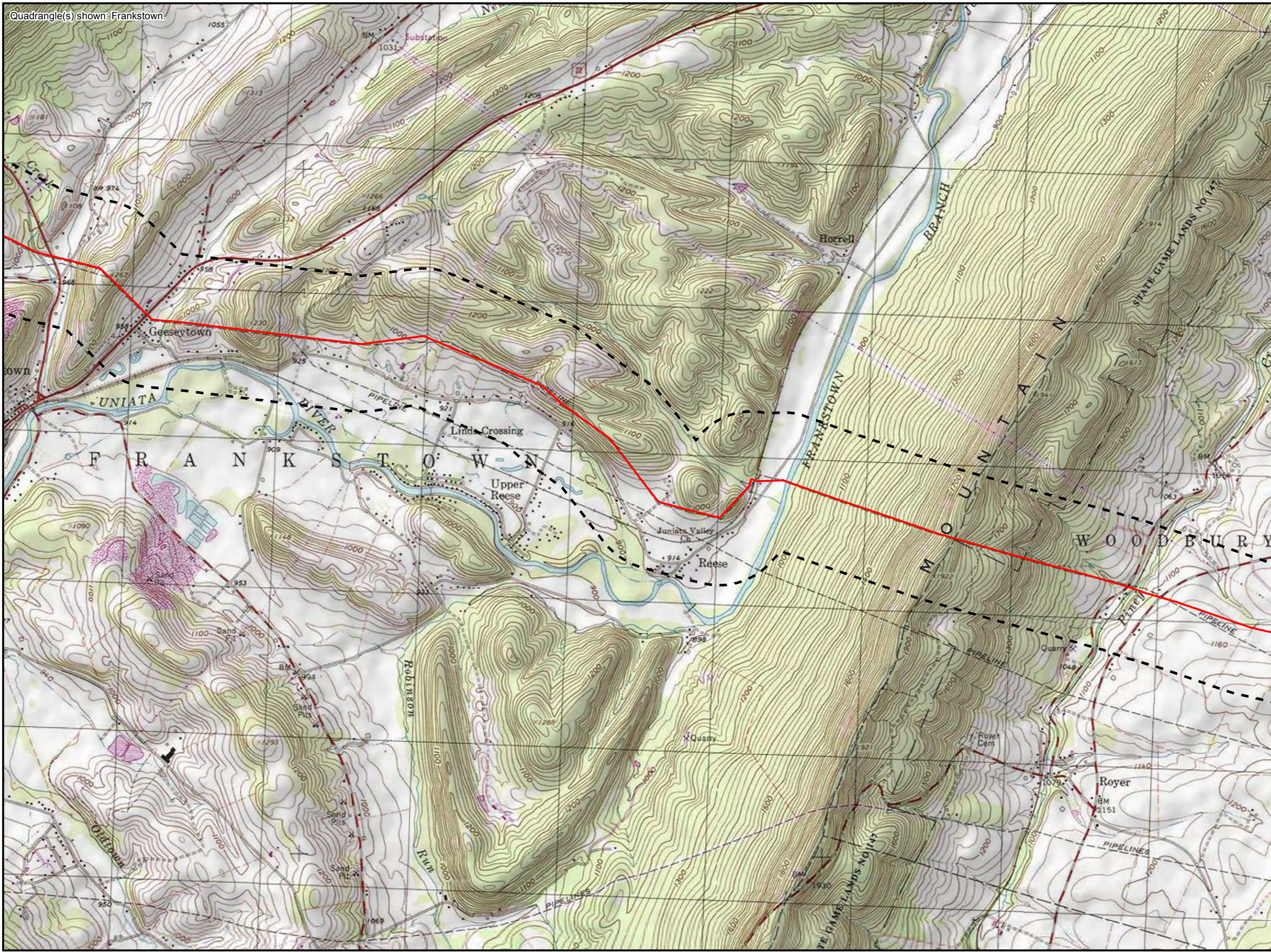
FIGURE 24
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Frankstown.



Legend
 1500 ft Buffer

Sheet Identifier

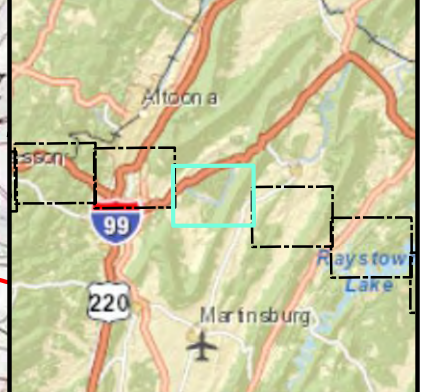


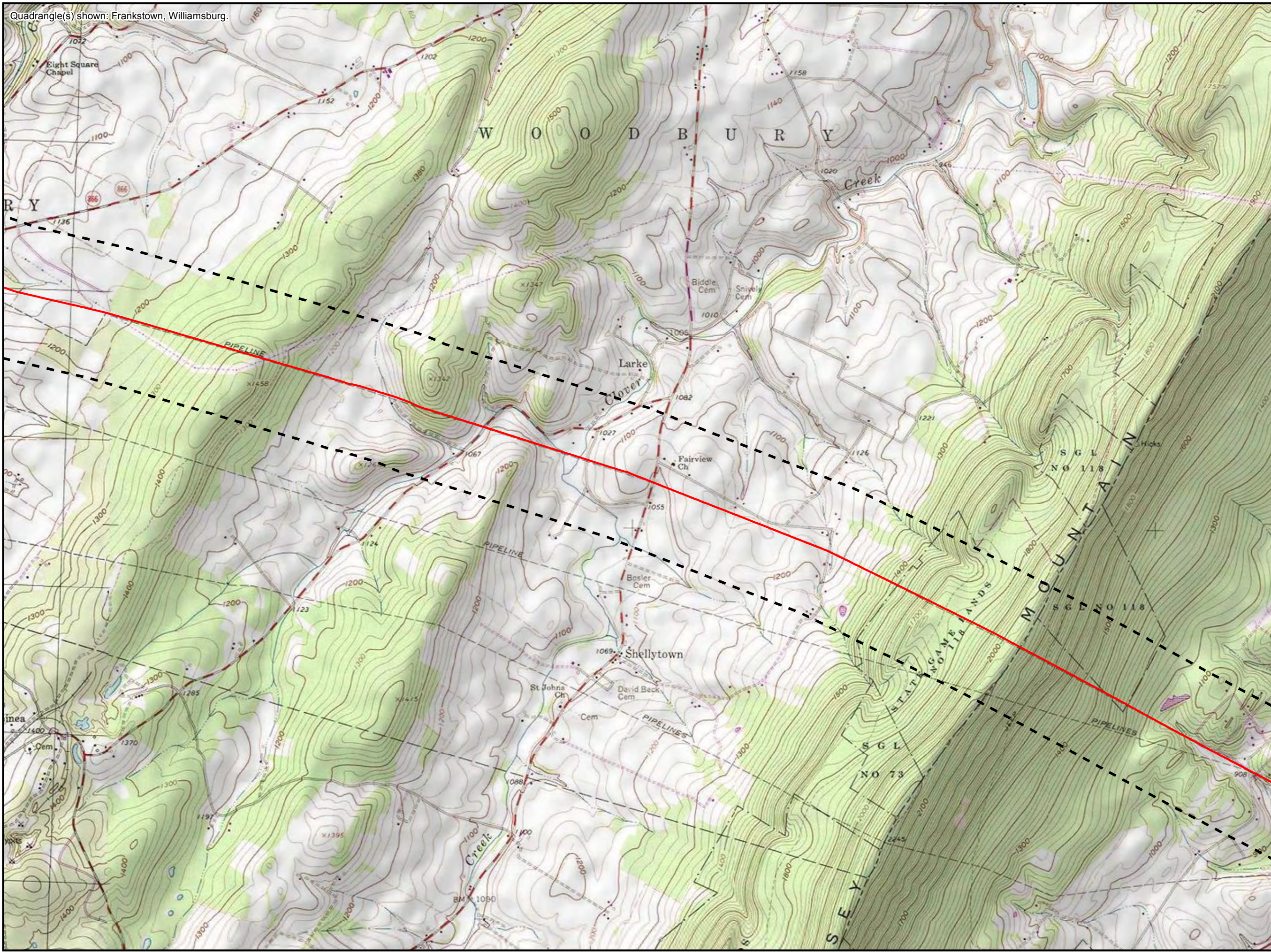
FIGURE 25
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
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PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Frankstown, Williamsburg.



Legend
 1500 ft Buffer

Sheet Identifier

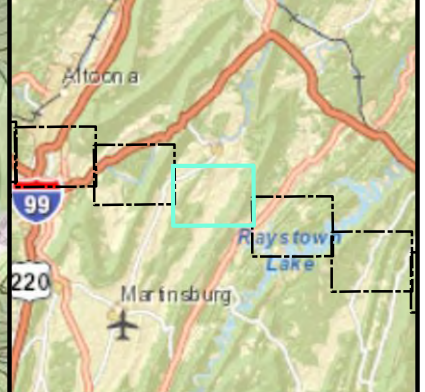


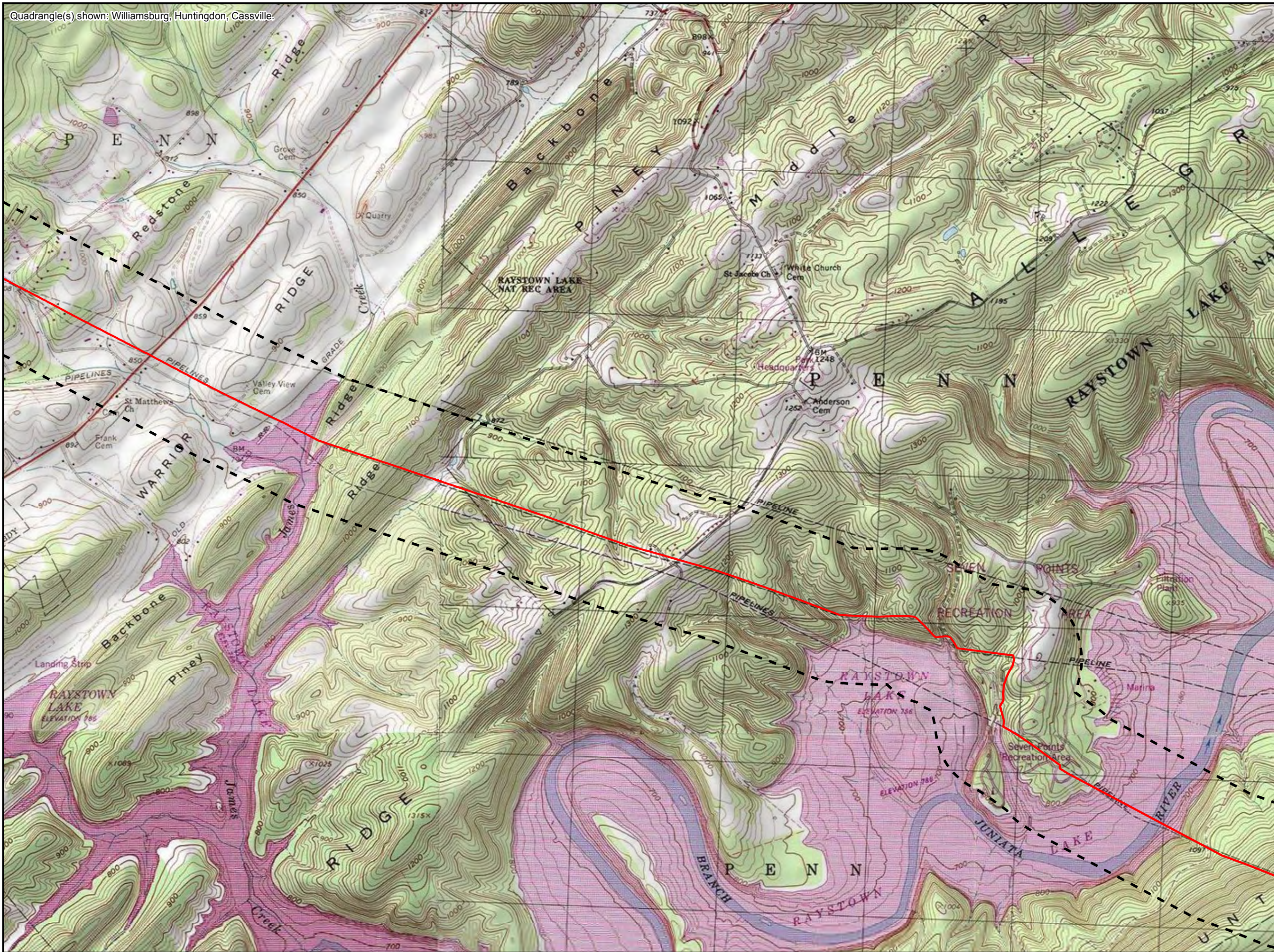
FIGURE 26
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
BLAIR, HUNTINGDON COUNTY, PA



Notes:
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PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Williamsburg, Huntingdon, Cassville.



Legend
 1500 ft Buffer

Sheet Identifier

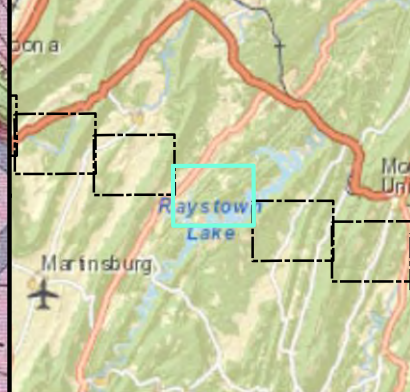


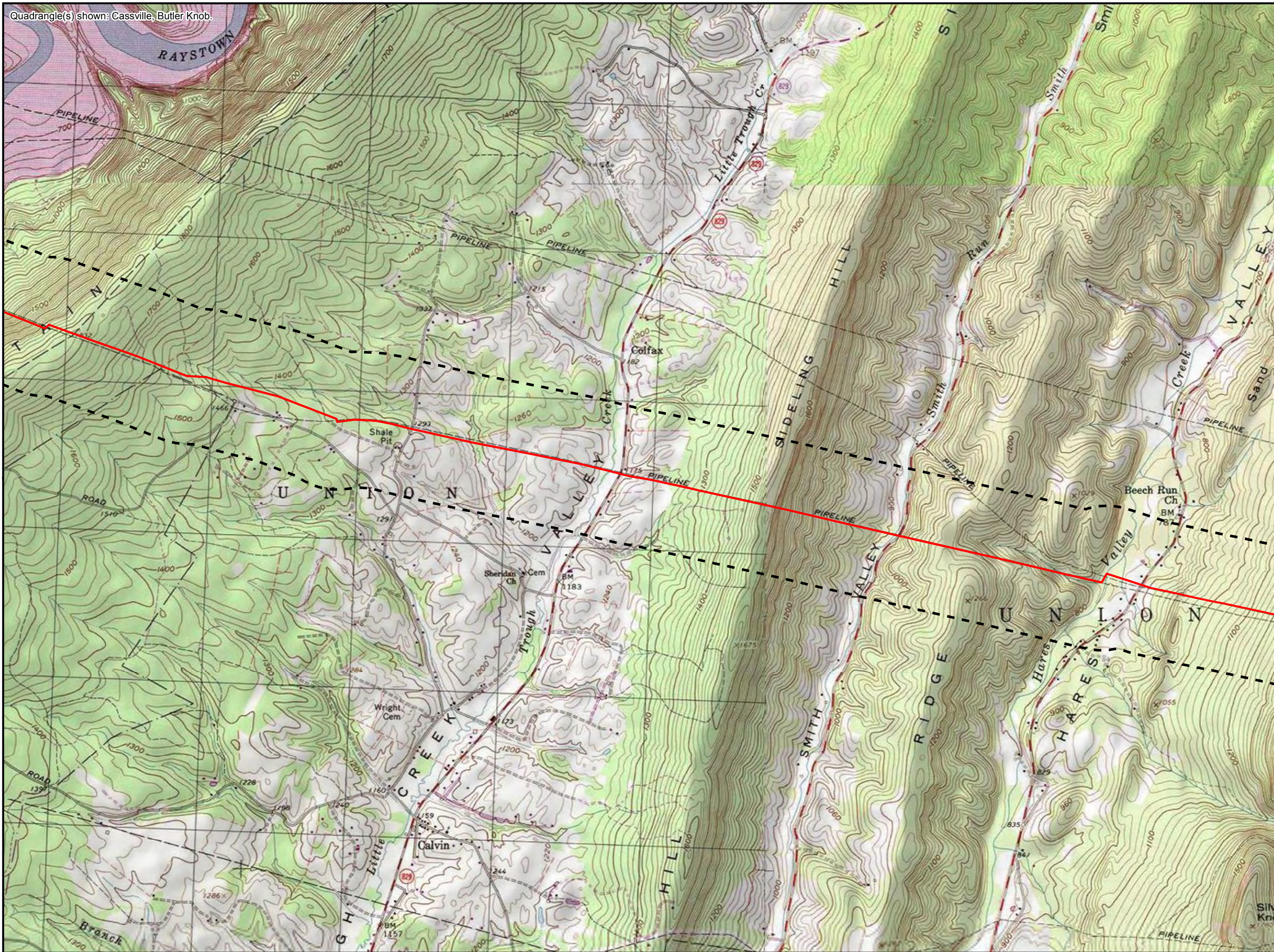
FIGURE 27
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
HUNTINGDON COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA\MXD 11/20/13 JN

Quadrangle(s) shown: Cassville, Butler Knob.



Legend
[Symbol] 1500 ft Buffer

Sheet Identifier

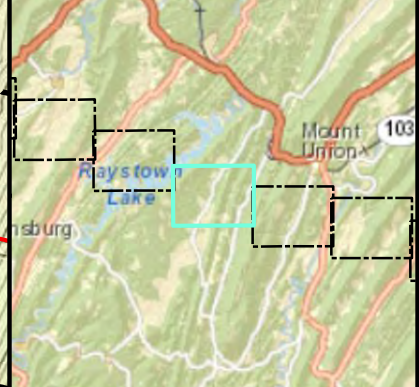


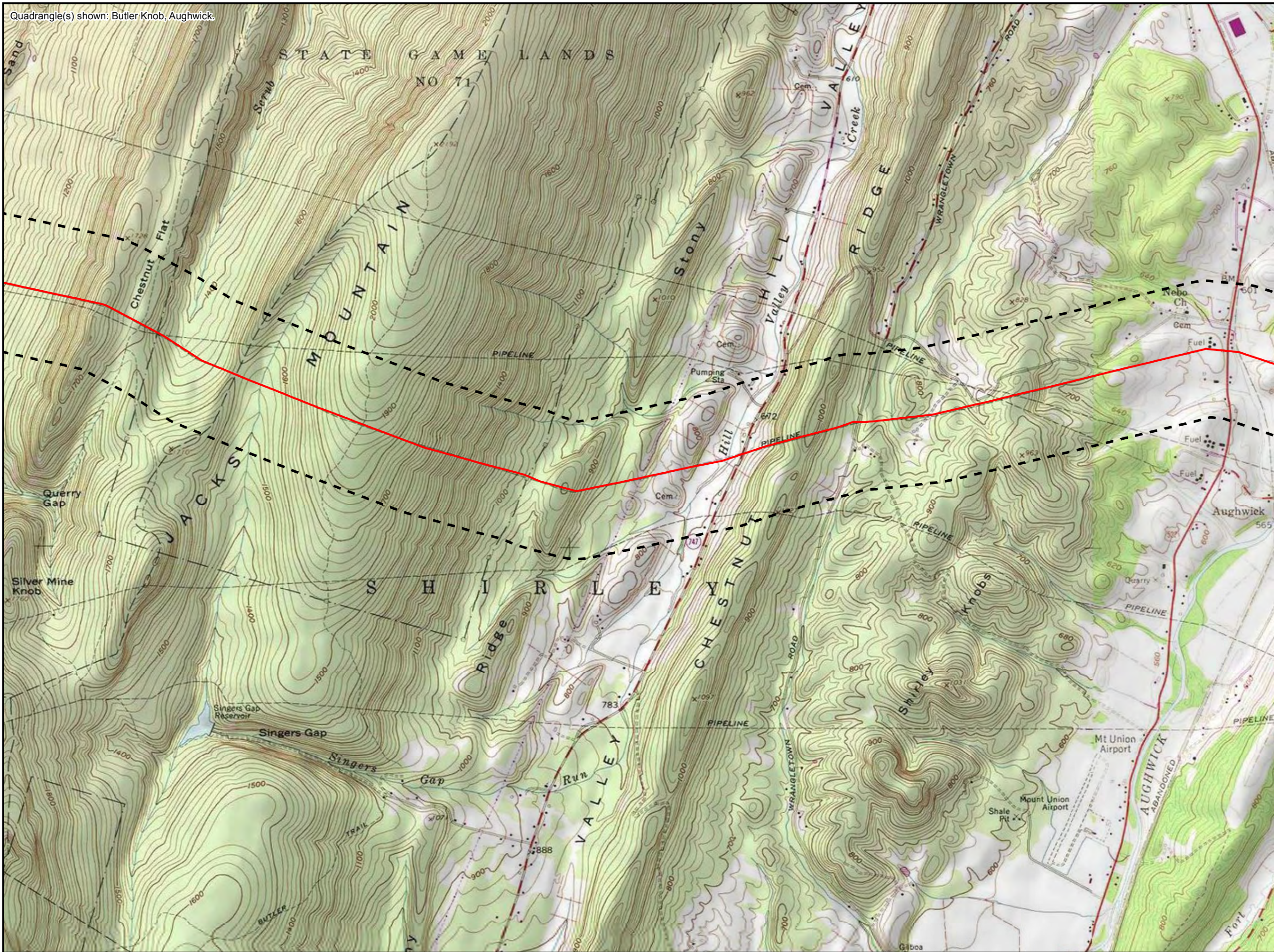
FIGURE 28
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
HUNTINGDON COUNTY, PA



Notes:
1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Butler Knob, Aughwick.



Legend
 1500 ft Buffer

Sheet Identifier

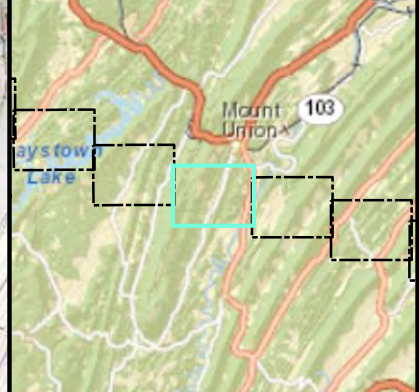


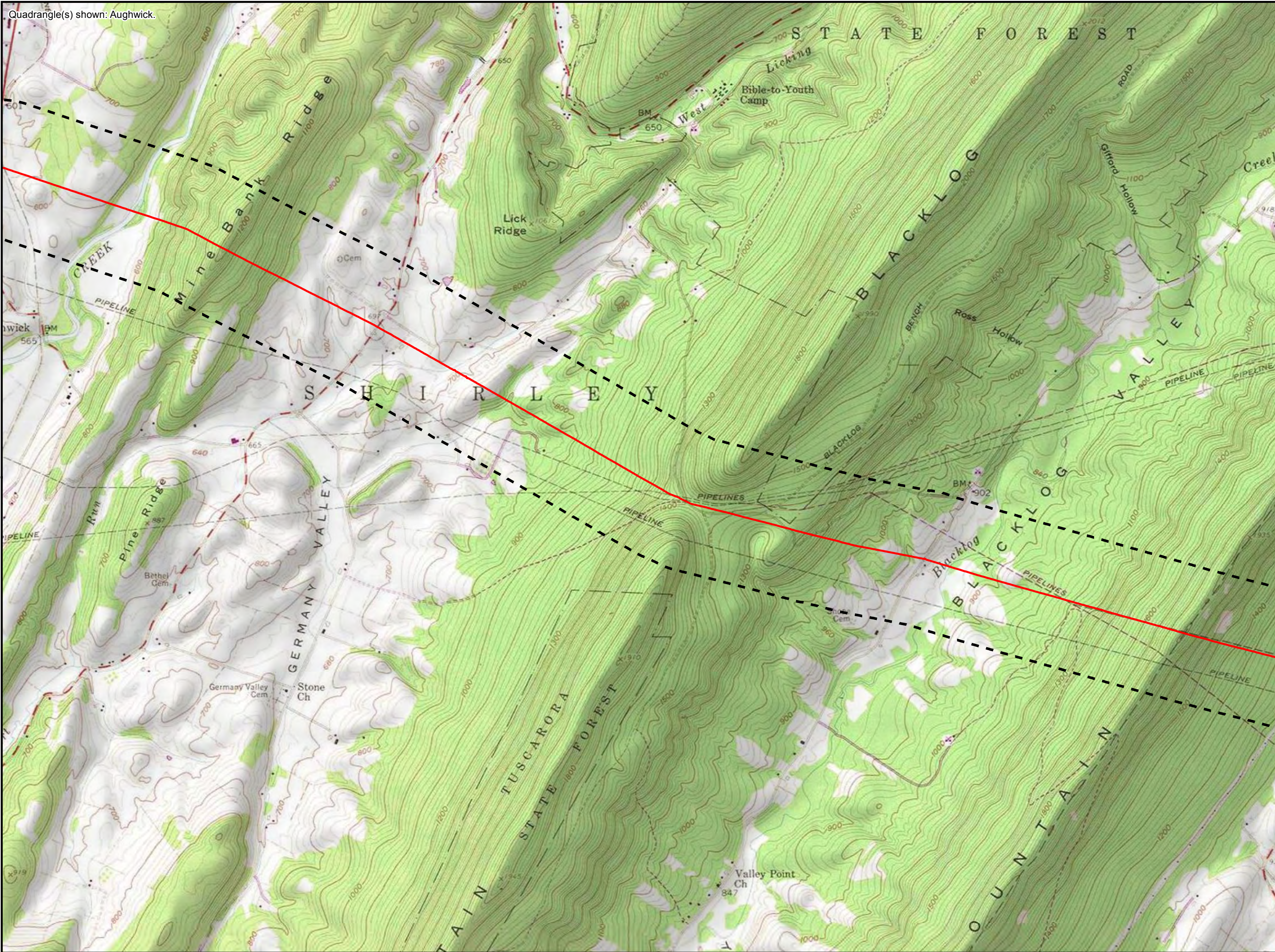
FIGURE 29
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
HUNTINGDON COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

P:\GIS\SUNOCO\MARINER EAST 2\MXD\MARINER_EAST2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Aughwick.



Legend
 1500 ft Buffer

Sheet Identifier

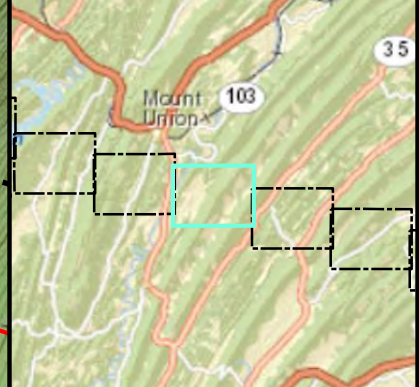


FIGURE 30
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
HUNTINGDON COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXPNDI_MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Aughwick, Blairs Mills.



Legend
 1500 ft Buffer

Sheet Identifier

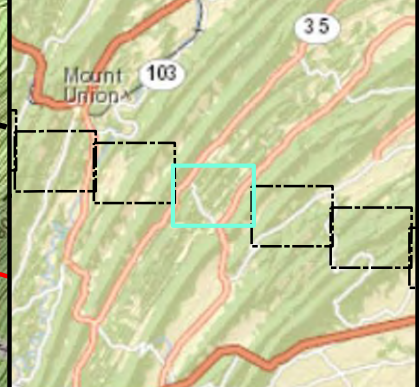
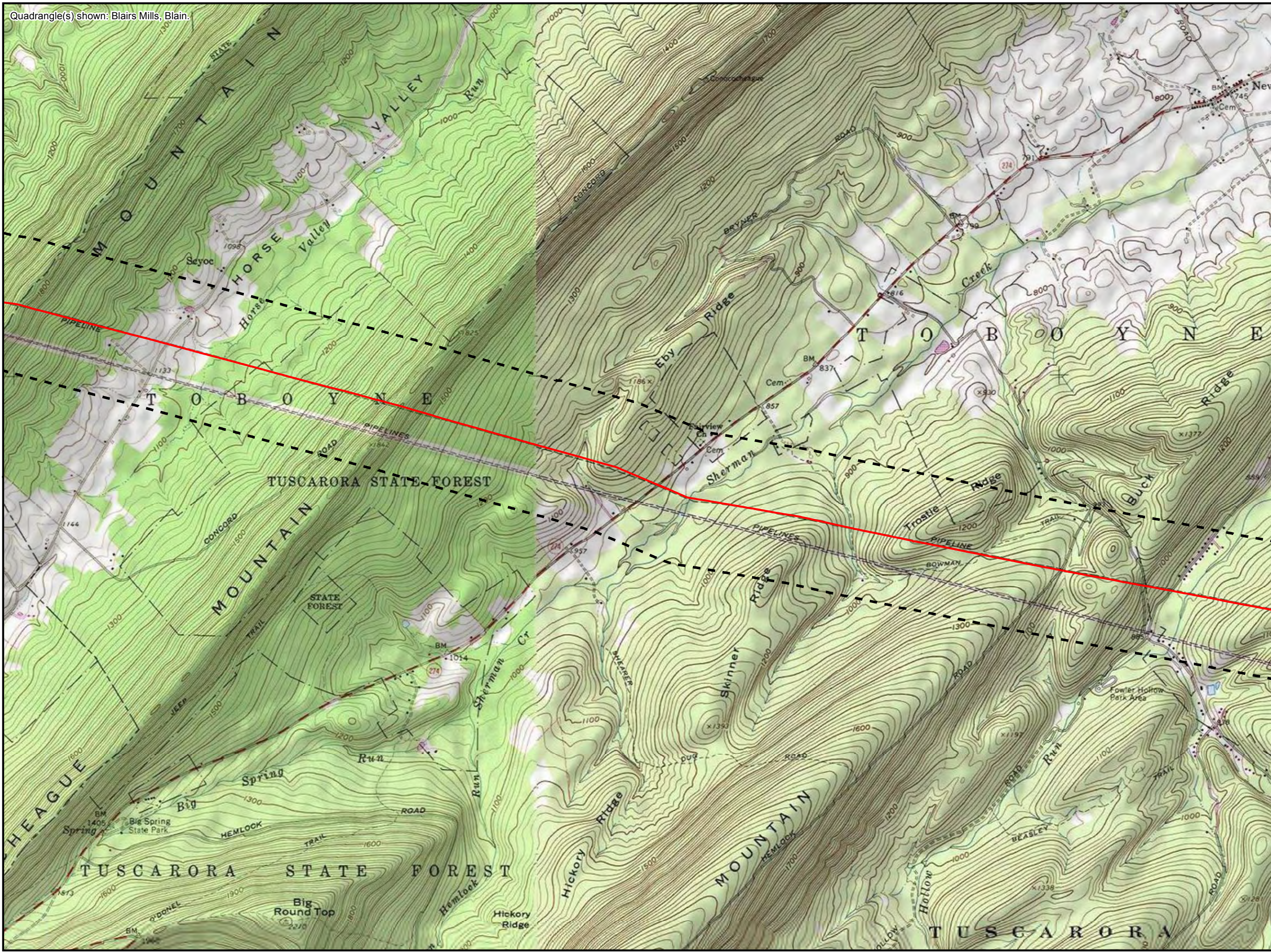


FIGURE 31
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
HUNTINGDON, JUNIATA COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

Quadrangle(s) shown: Blairs Mills, Blain.



Legend
 1500 ft Buffer

Sheet Identifier

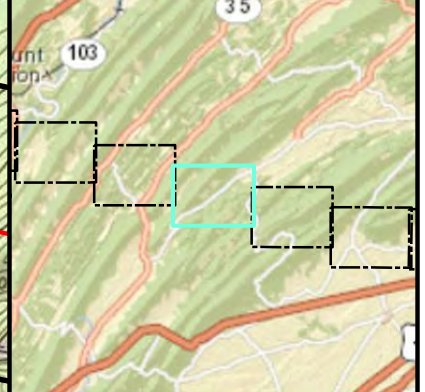


FIGURE 32
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
JUNIATA, PERRY COUNTY, PA



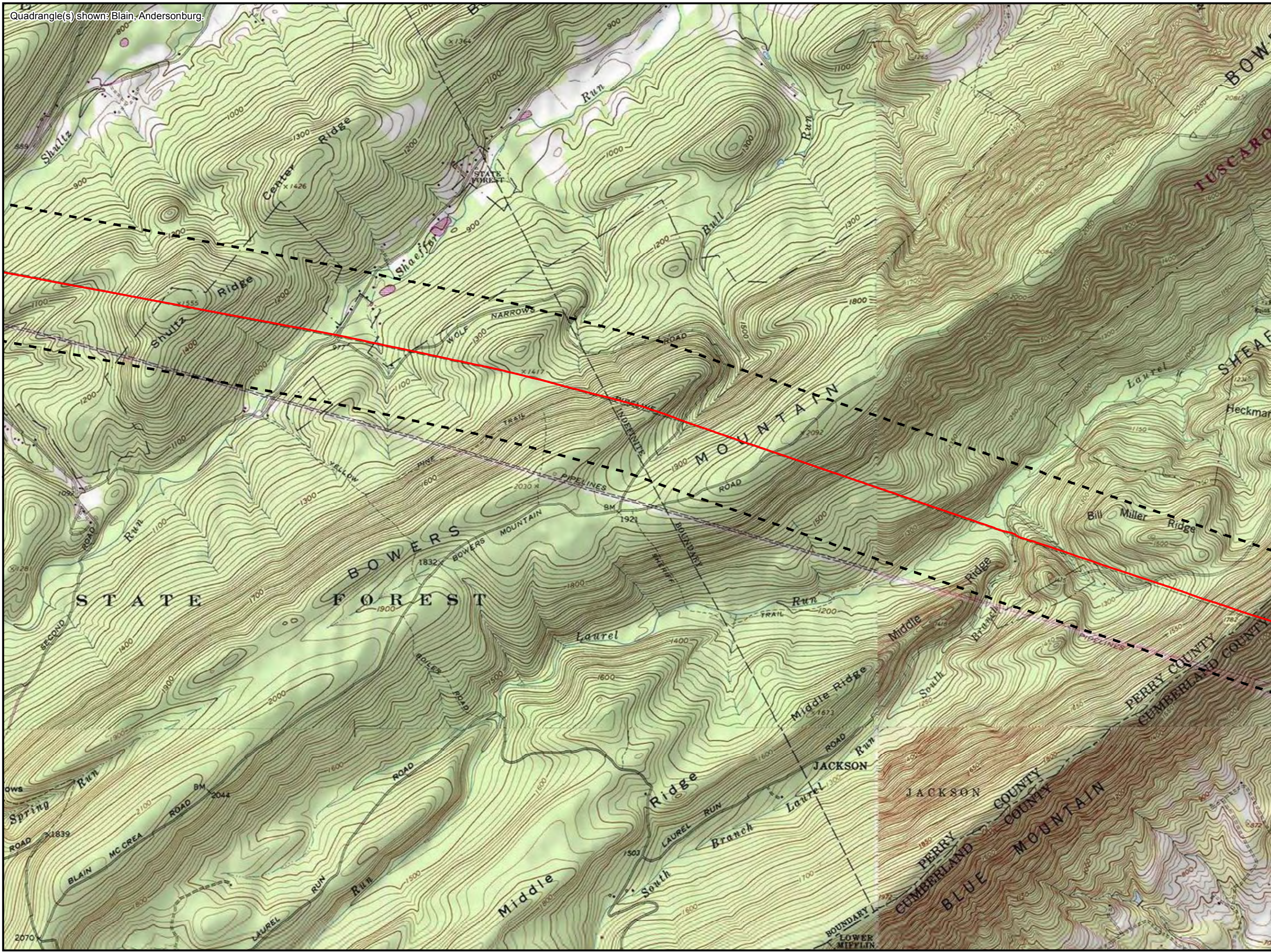
Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Blain, Andersonburg.

Legend

1500 ft Buffer



Sheet Identifier

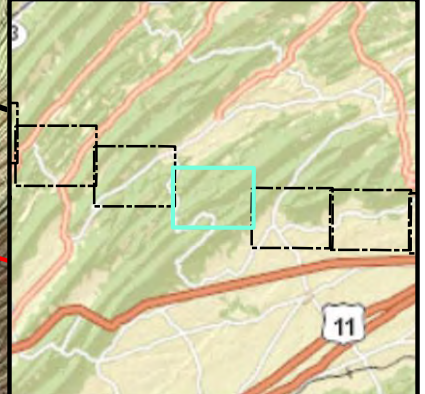


FIGURE 33
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
PERRY COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Andersonburg, Newville, Plainfield.



Legend
1500 ft Buffer

Sheet Identifier

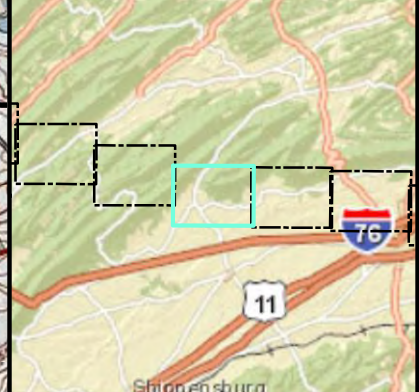


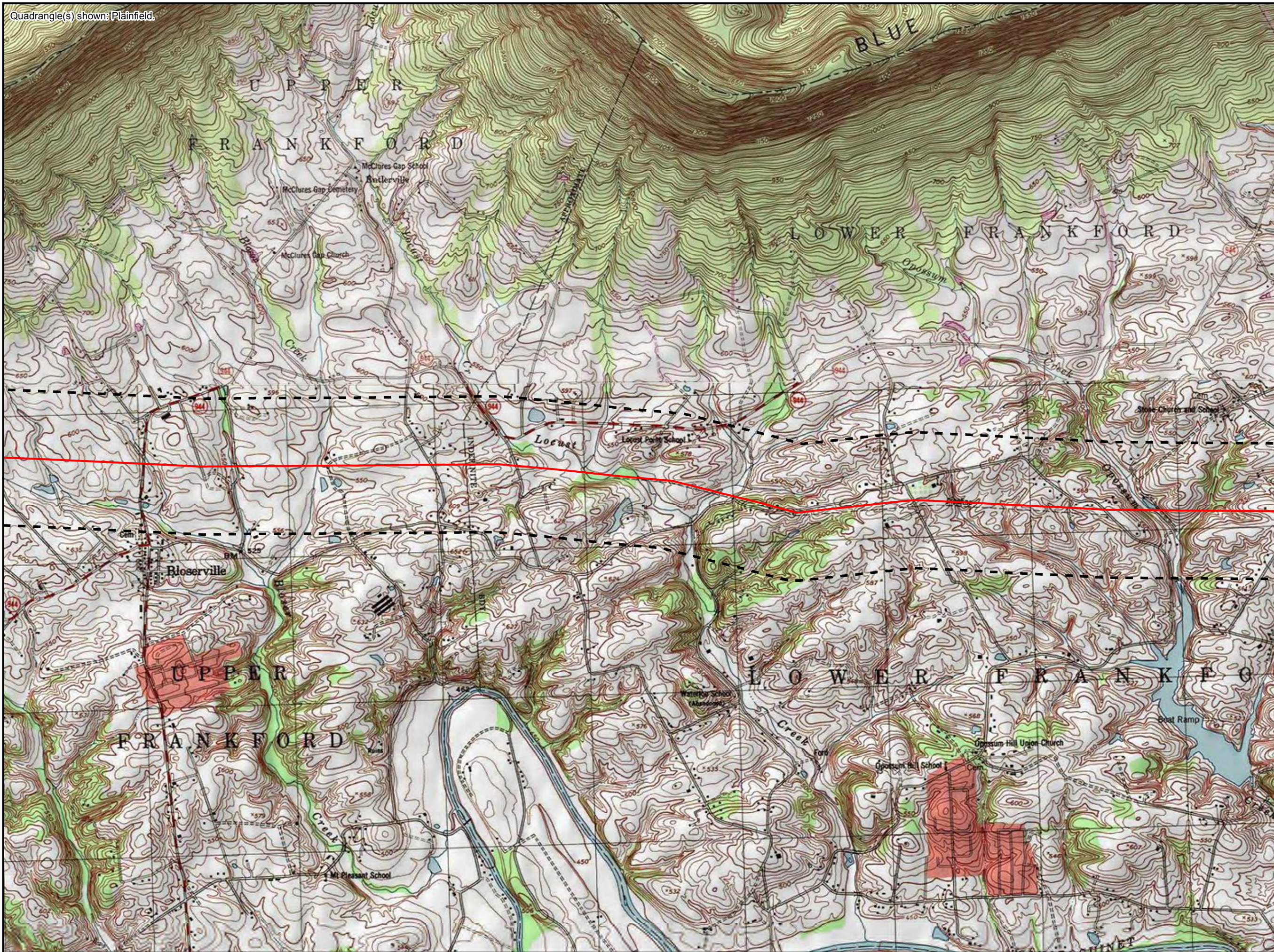
FIGURE 34
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CUMBERLAND COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

FGH_PGISUNOCOMARINER_EAST_2MIXMAREAST2_PNDI_PA.MXD 11/2013 JN

Quadrangle(s) shown: Plainfield.



Legend
 1500 ft Buffer

Sheet Identifier

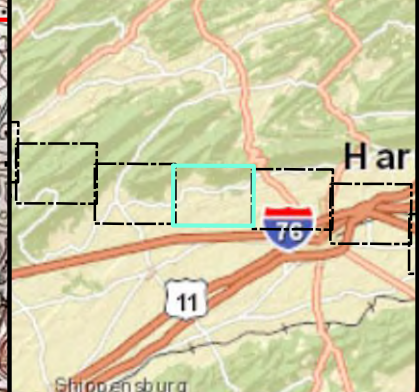


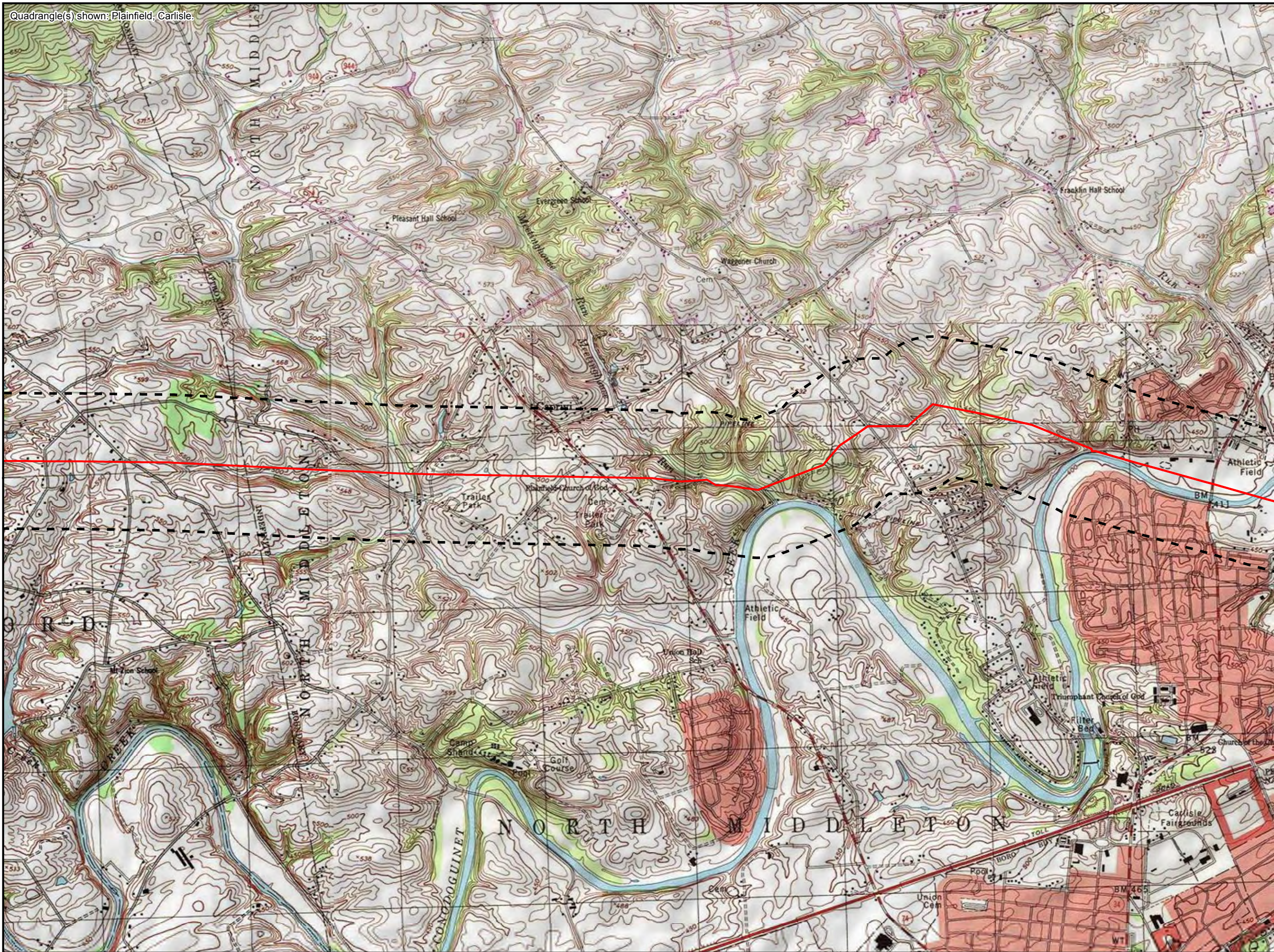
FIGURE 35
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CUMBERLAND COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Plainfield, Carlisle.



Legend
 1500 ft Buffer

Sheet Identifier

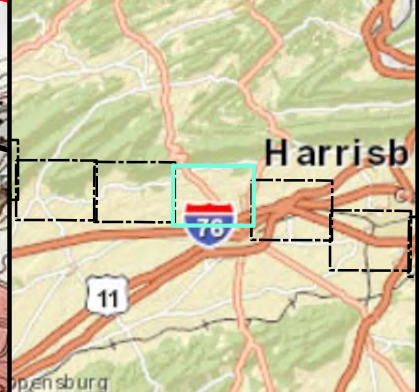


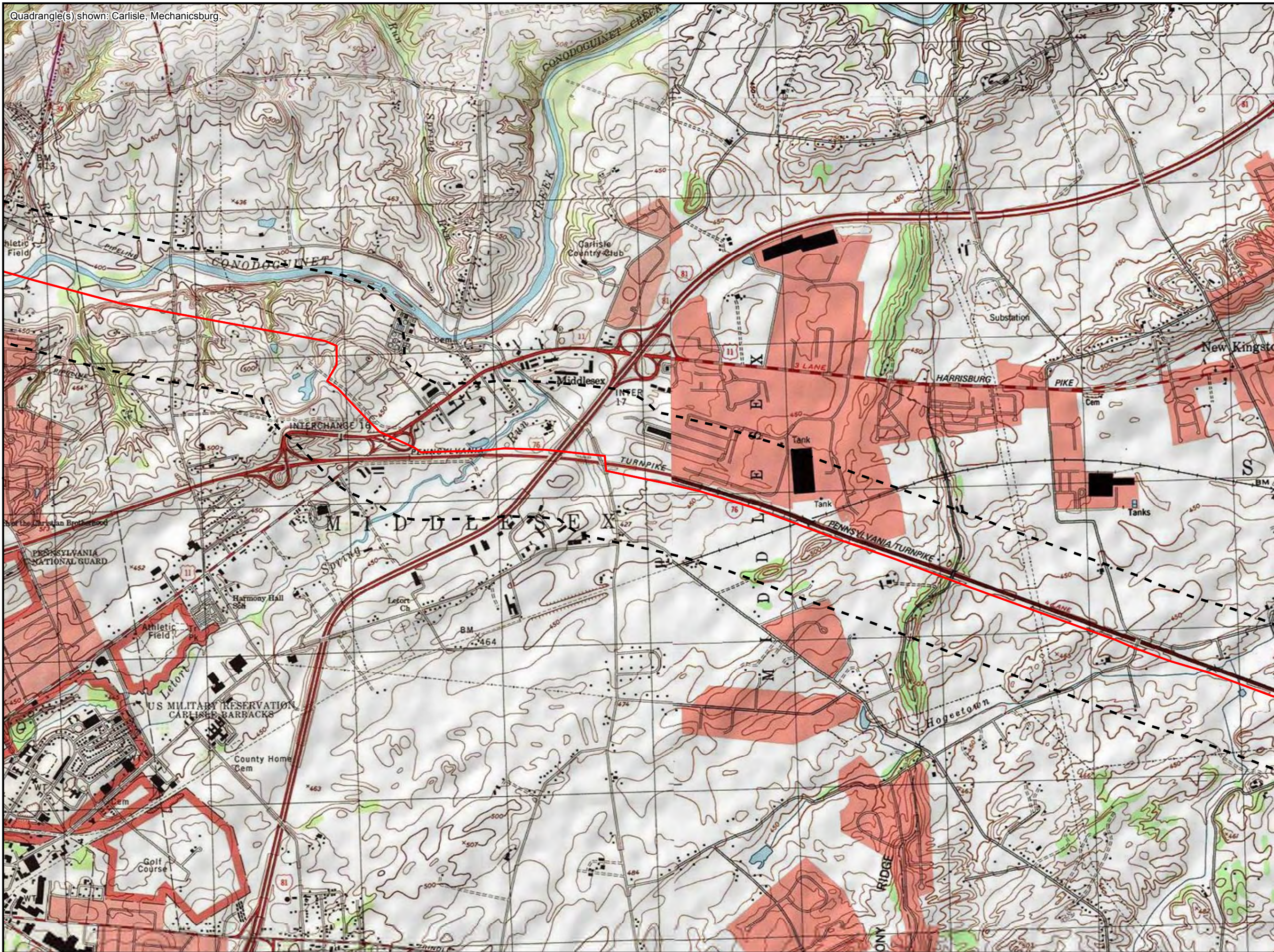
FIGURE 36
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CUMBERLAND COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MIDMIDMAREAST2_PNDI_PA.MXD 11/2013 JN

Quadrangle(s) shown: Carlisle, Mechanicsburg.



Legend
 [Dashed Box] 1500 ft Buffer

Sheet Identifier

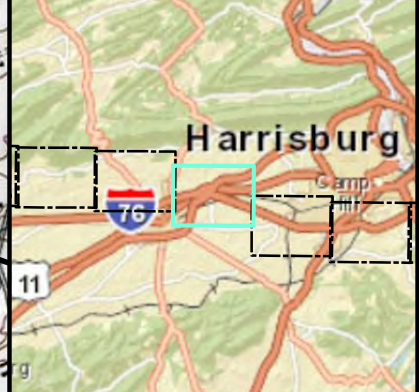


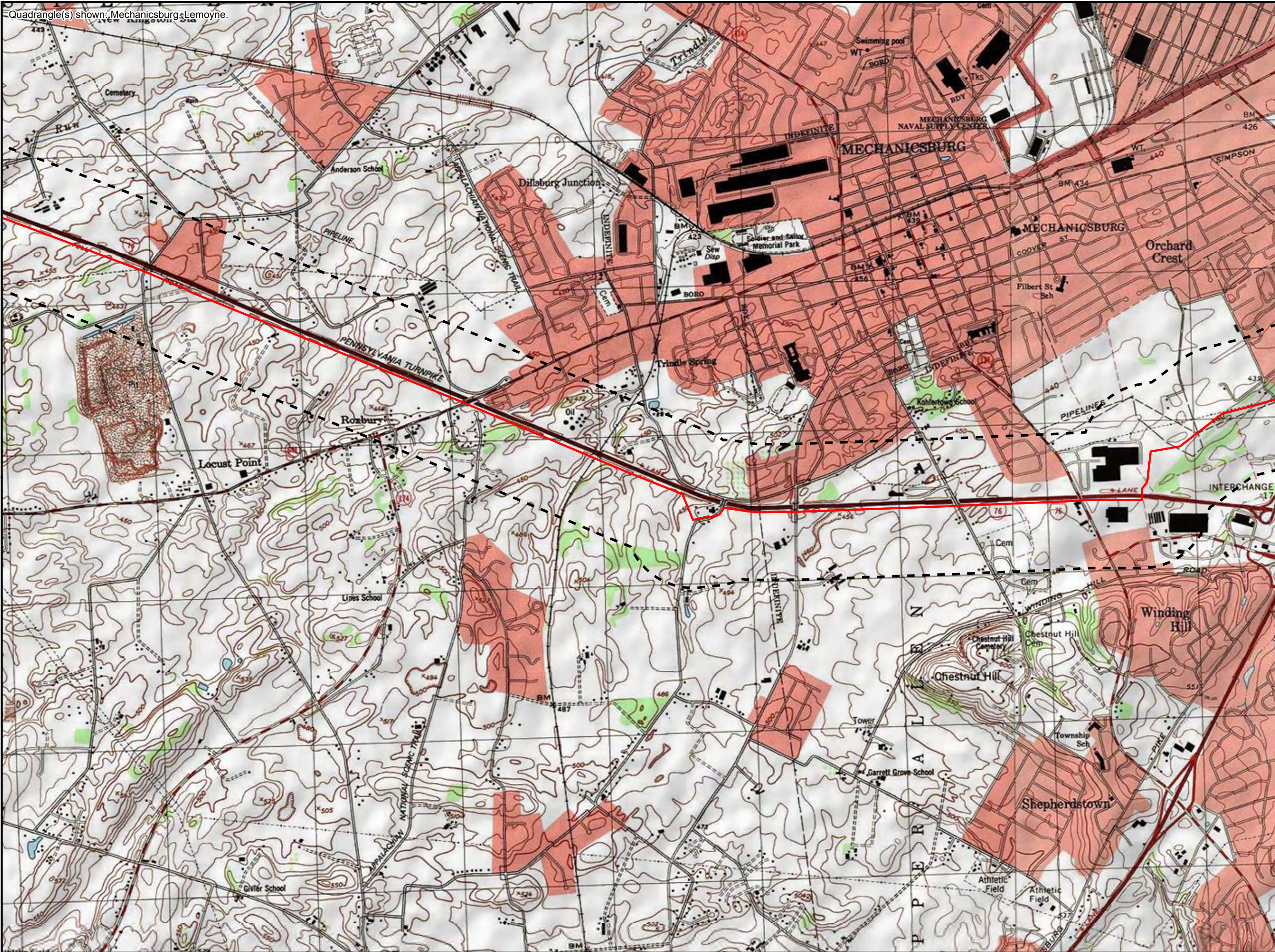
FIGURE 37
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CUMBERLAND COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA\MXD 11/20/13 JN

Quadrangle(s) shown: Mechanicsburg, Lemoyne.



Legend
 1500 ft Buffer

Sheet Identifier

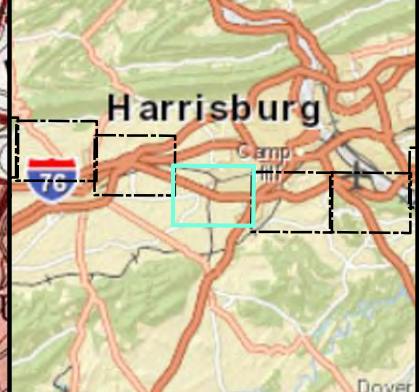


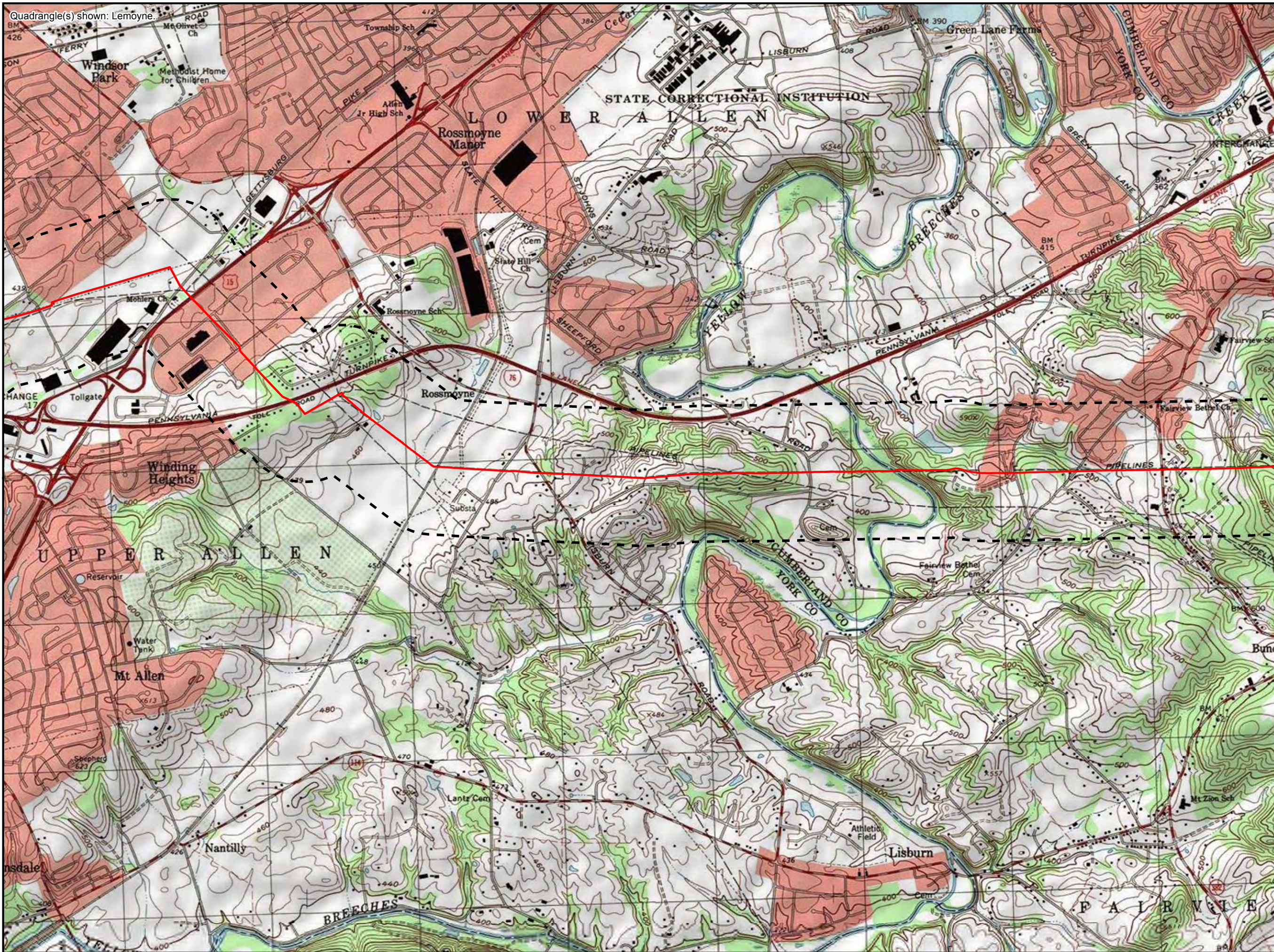
FIGURE 38
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CUMBERLAND COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA\MXD 11/20/13.JN

Quadrangle(s) shown: Lemoyne.



Legend
 1500 ft Buffer

Sheet Identifier

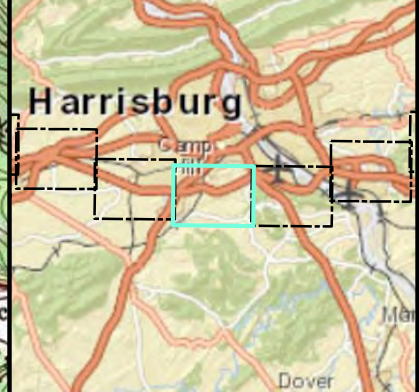


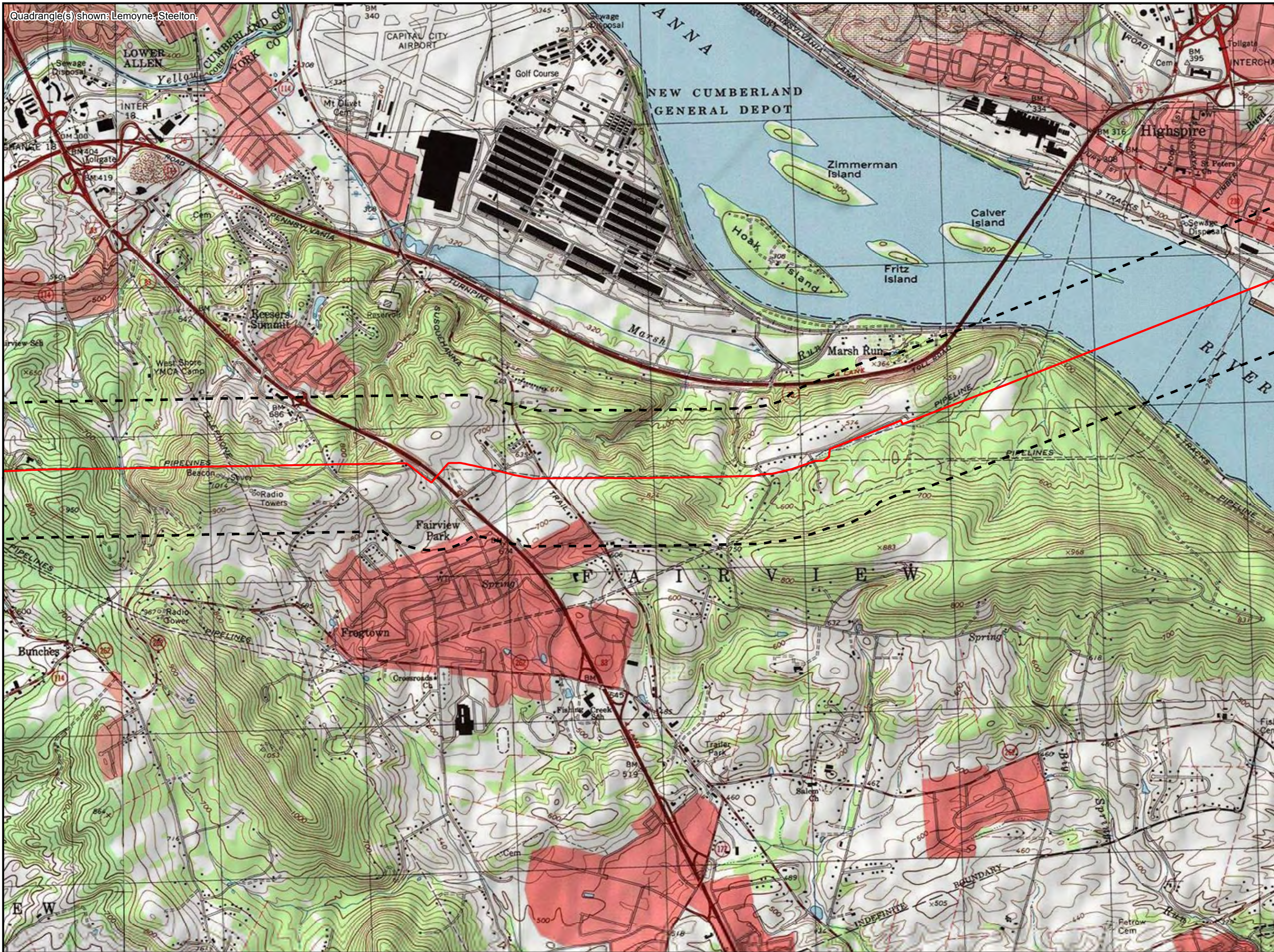
FIGURE 39
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CUMBERLAND, YORK COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST_2_PNDI_PA\MXD 11/20/13.JN

Quadrangle(s) shown: Lemoine, Steelton.



Legend
1500 ft Buffer

Sheet Identifier

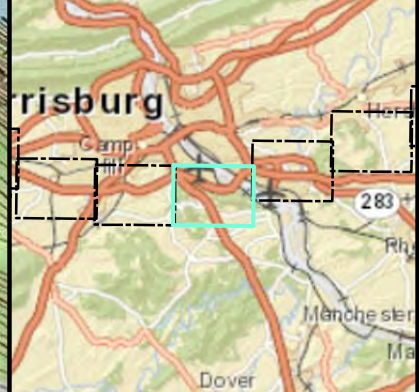


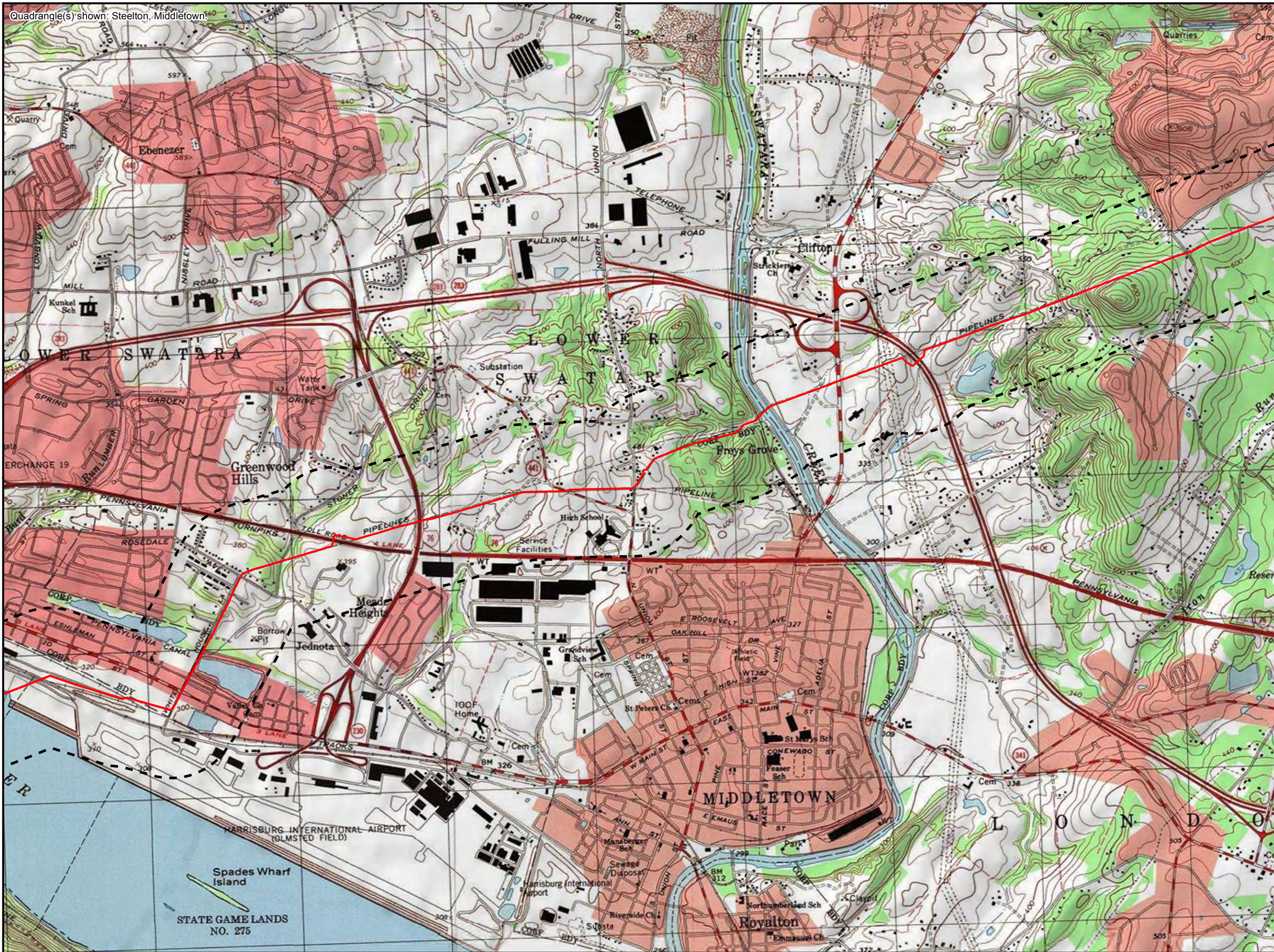
FIGURE 40
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
YORK, DAUPHIN COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Steelton, Middletown.



Legend
 1500 ft Buffer

Sheet Identifier

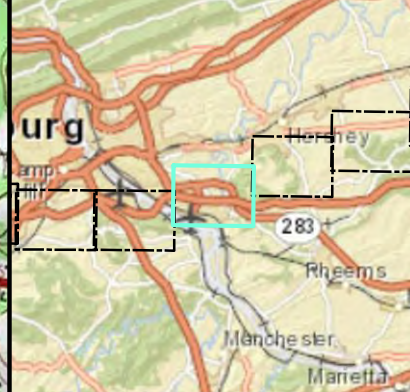


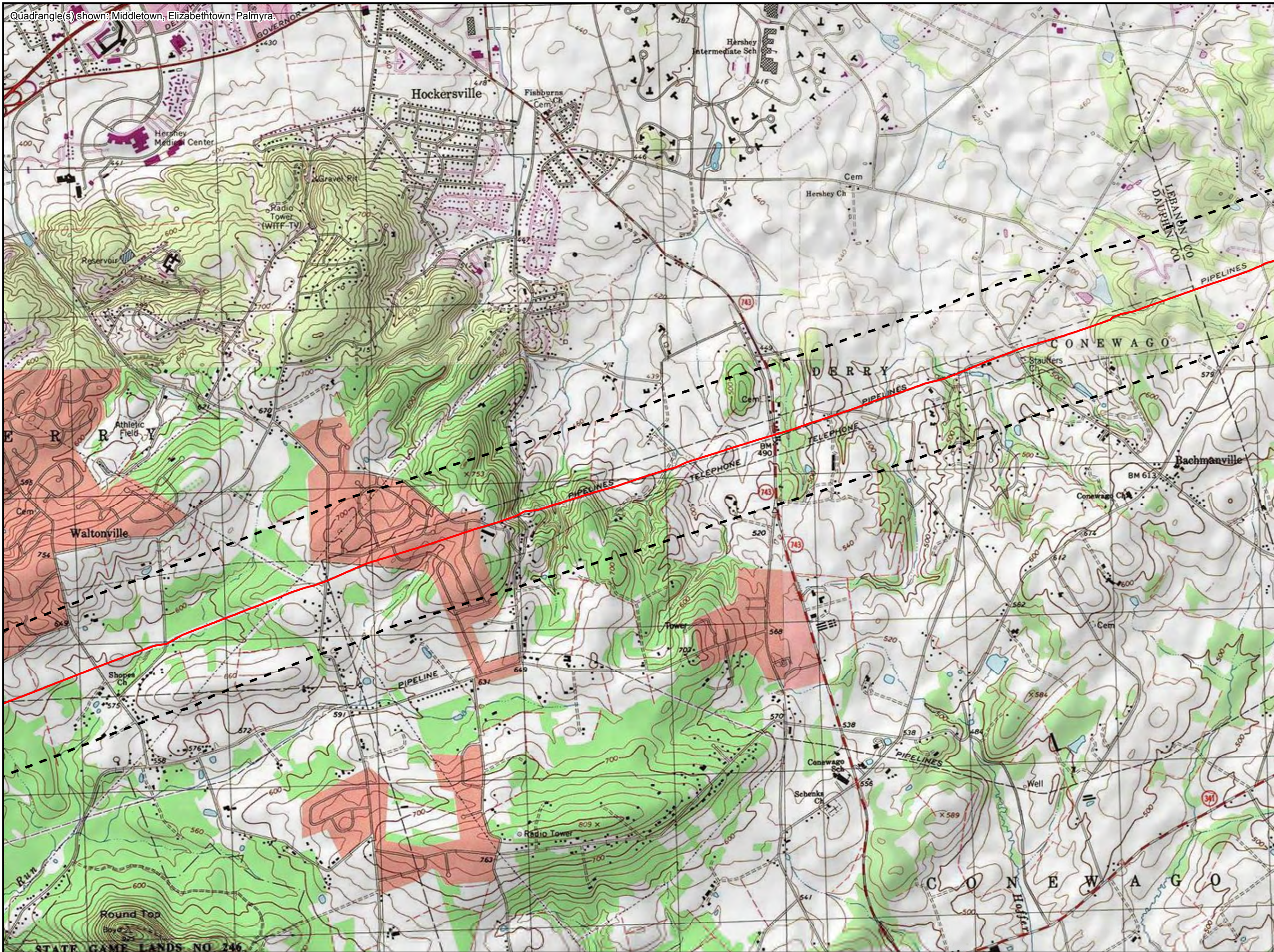
FIGURE 41
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
DAUPHIN COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Middletown, Elizabethtown, Palmyra.



Legend
 1500 ft Buffer

Sheet Identifier

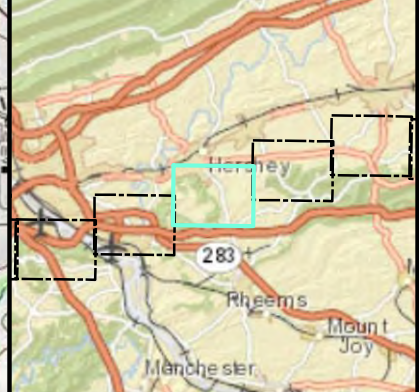


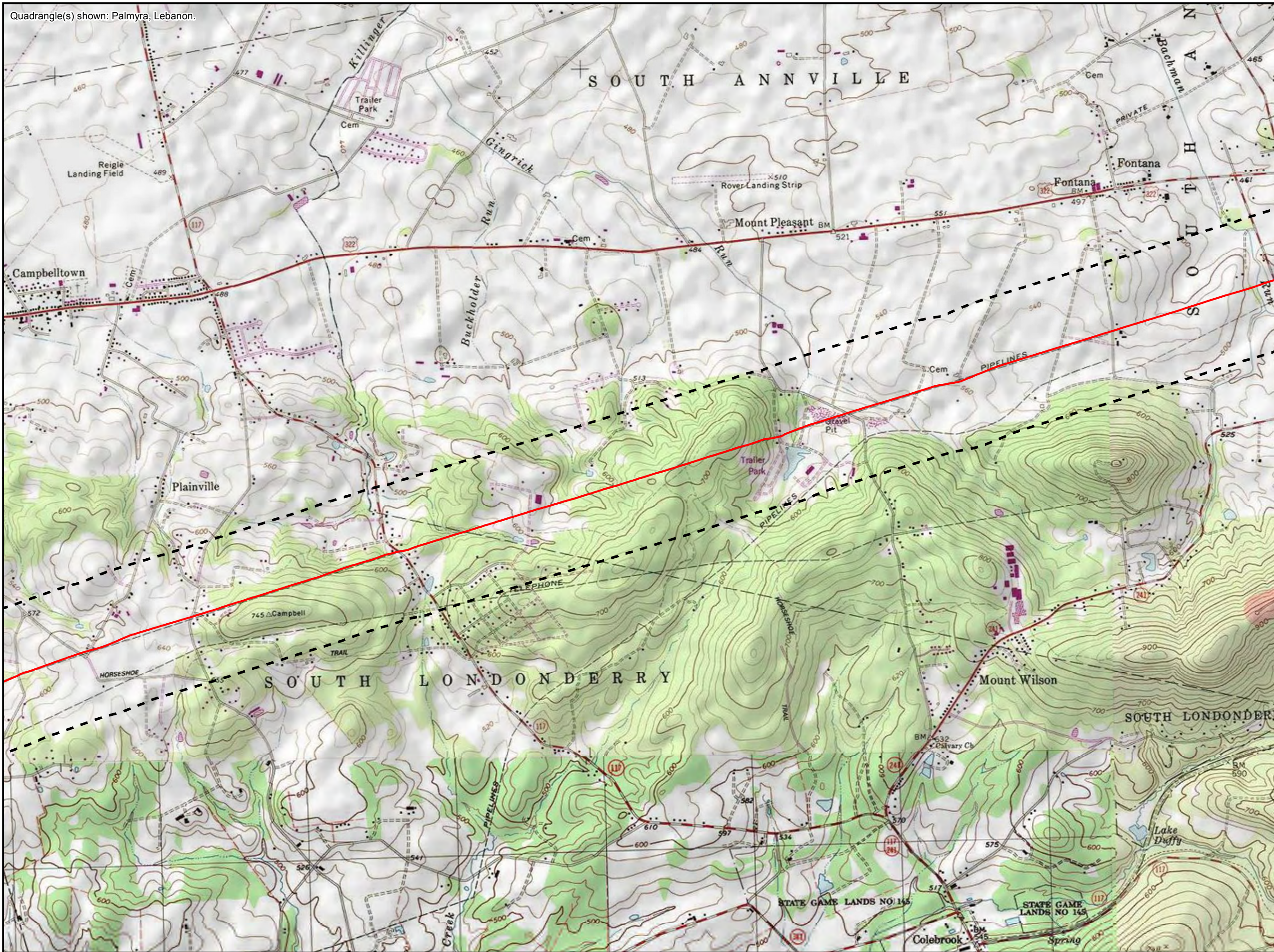
FIGURE 42
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
DAUPHIN, LEBANON COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Palmyra, Lebanon.



Legend
 1500 ft Buffer

Sheet Identifier

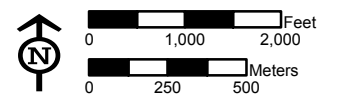
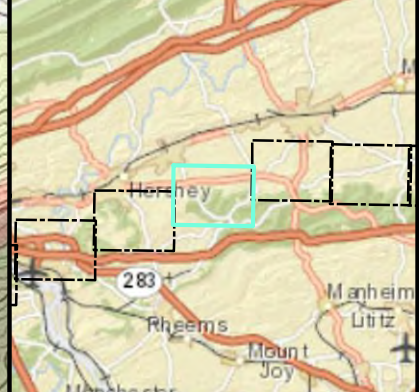


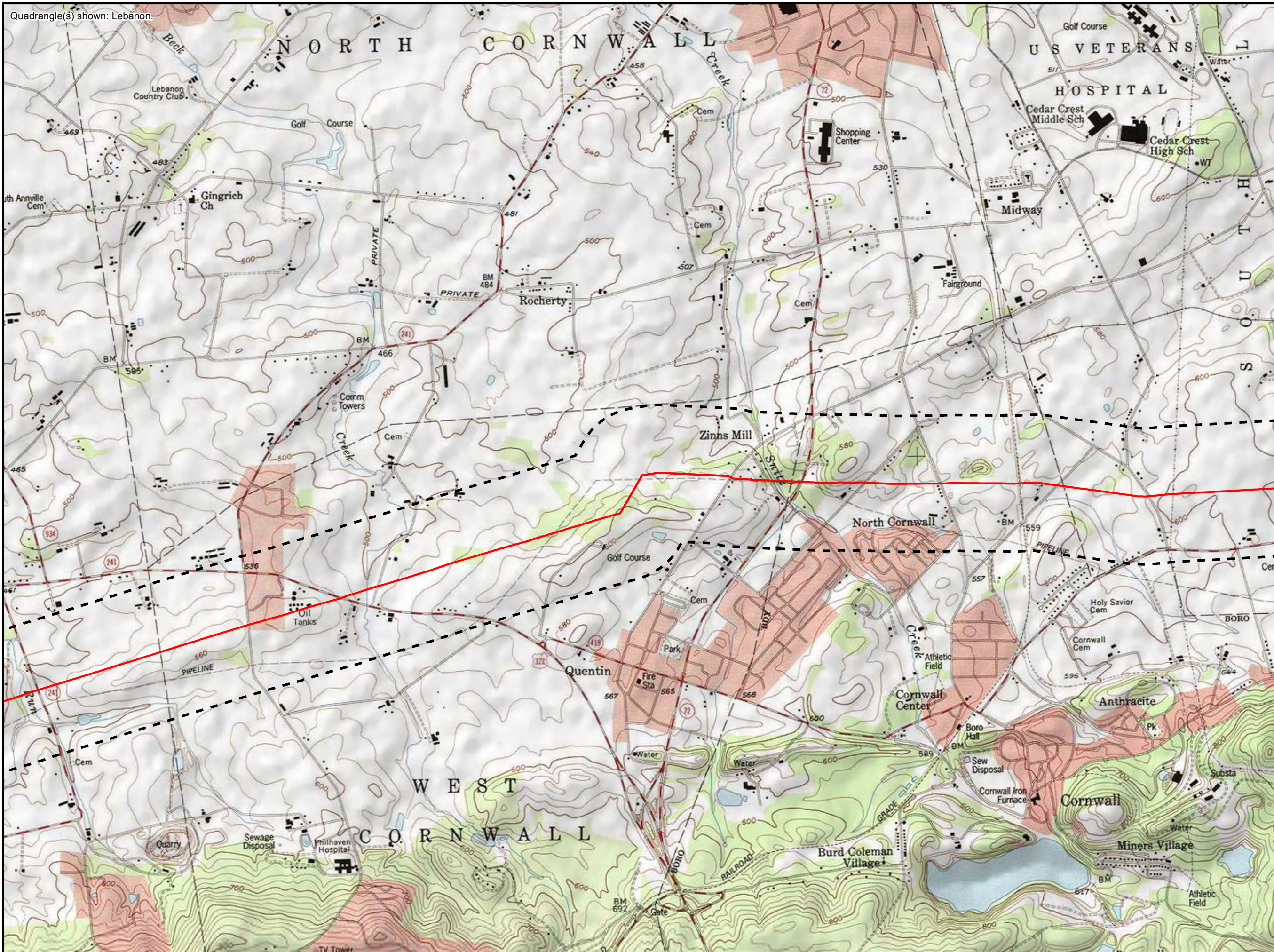
FIGURE 43
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
LEBANON COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service. (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXPNDI_MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Lebanon.



Legend
 1500 ft Buffer

Sheet Identifier

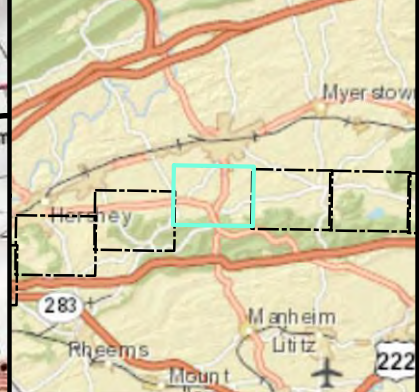


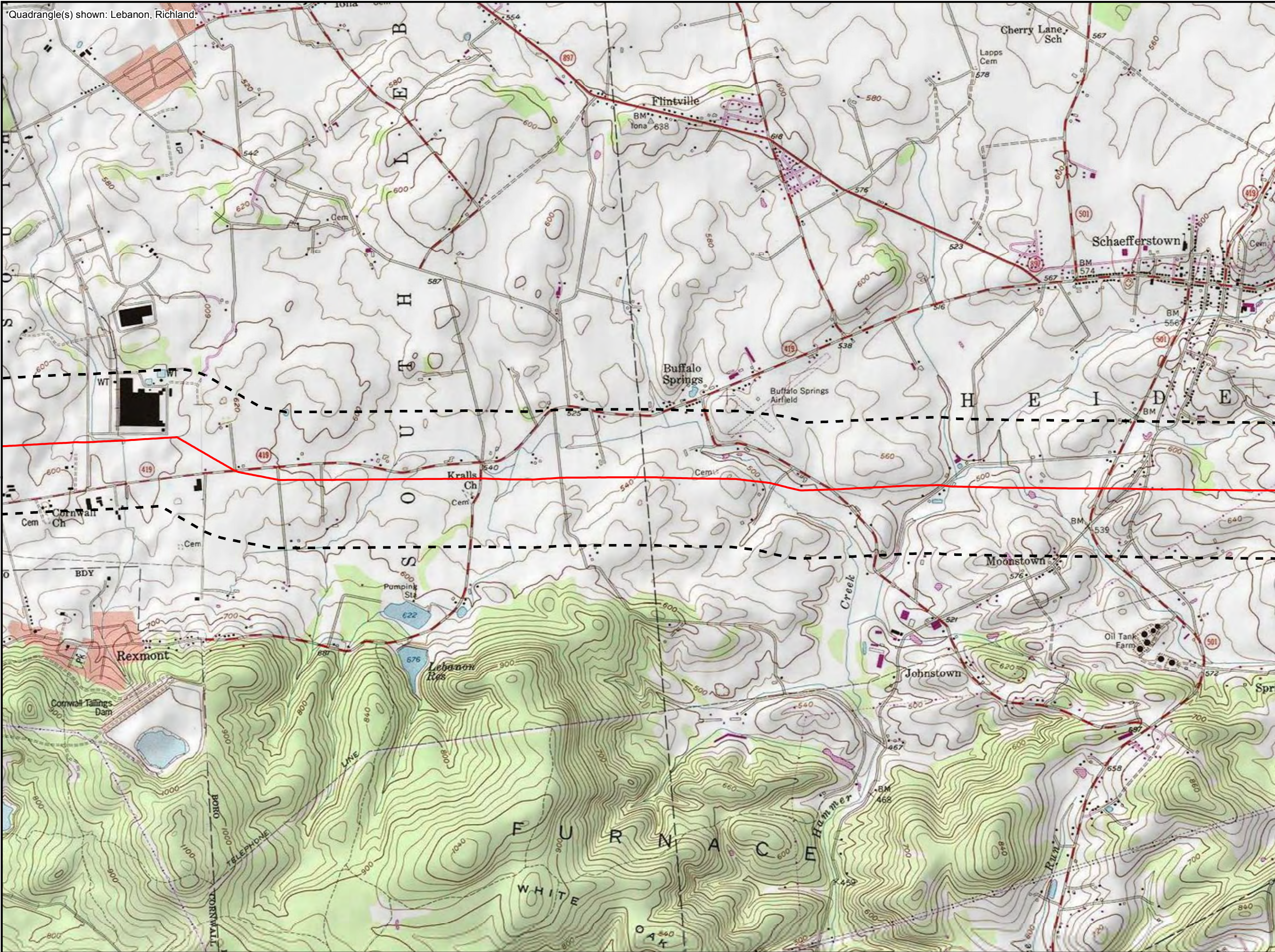
FIGURE 44
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
LEBANON COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA\MXD 11/20/13_JN

Quadrangle(s) shown: Lebanon, Richland



Legend
 1500 ft Buffer

Sheet Identifier

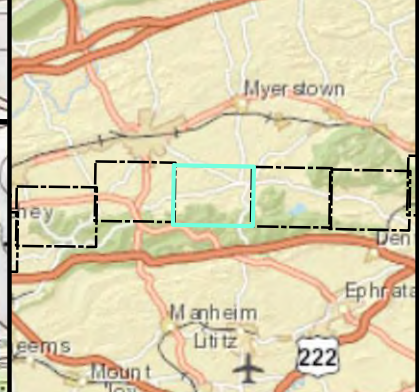


FIGURE 45
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
LEBANON COUNTY, PA



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 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA\MXD_112013_JN

Quadrangle(s) shown: Richland, Womelsdorf.



Legend
 1500 ft Buffer

Sheet Identifier

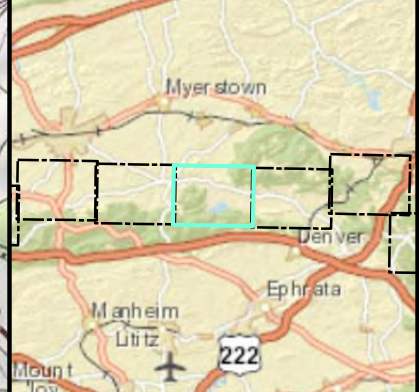


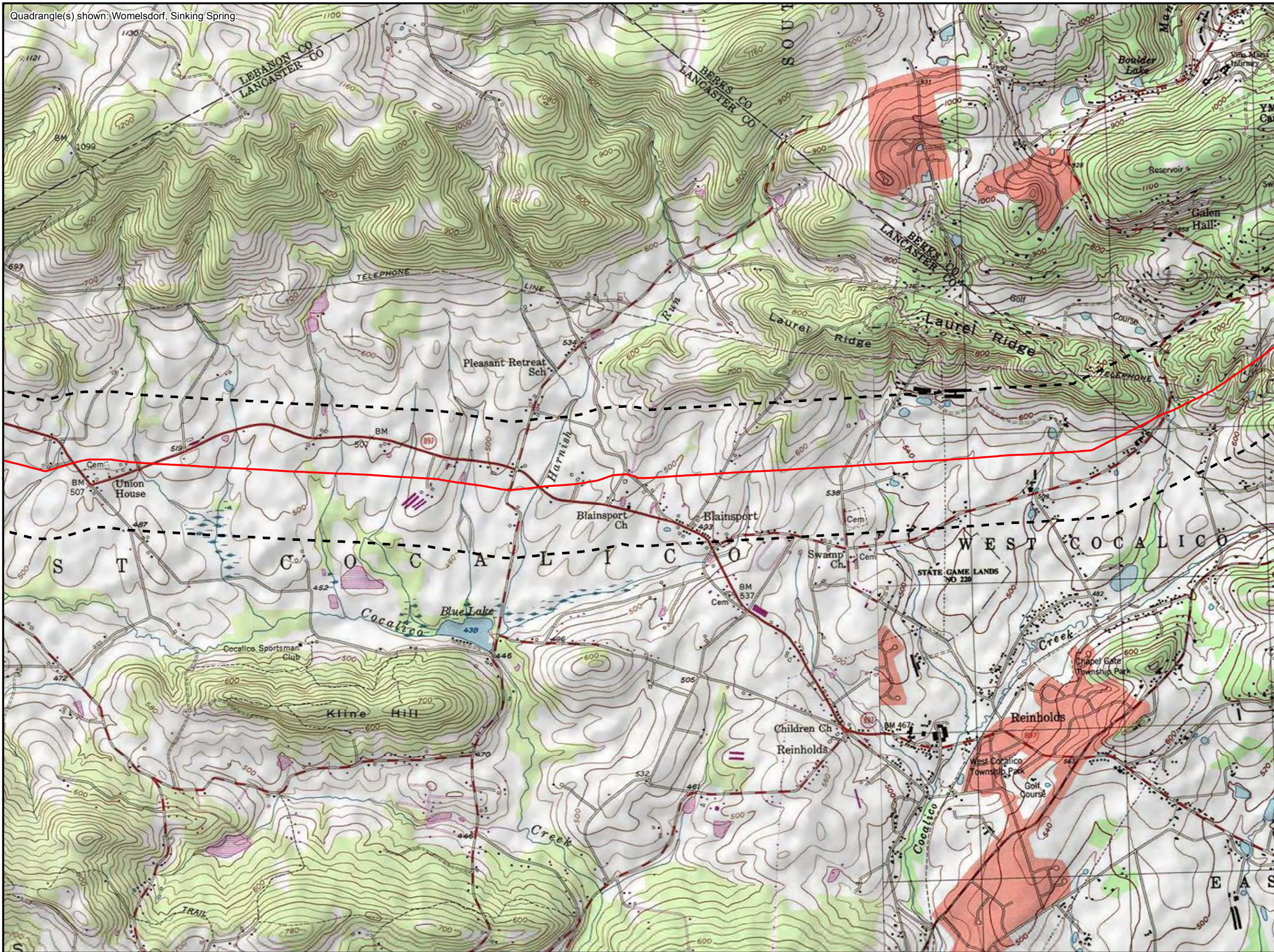
FIGURE 46
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
LEBANON COUNTY, PA



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 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXPNDI1500MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Womelsdorf, Sinking Spring.



Legend
 1500 ft Buffer

Sheet Identifier

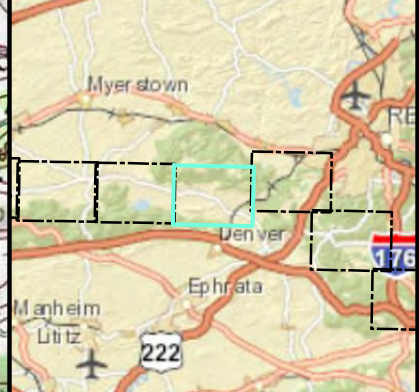


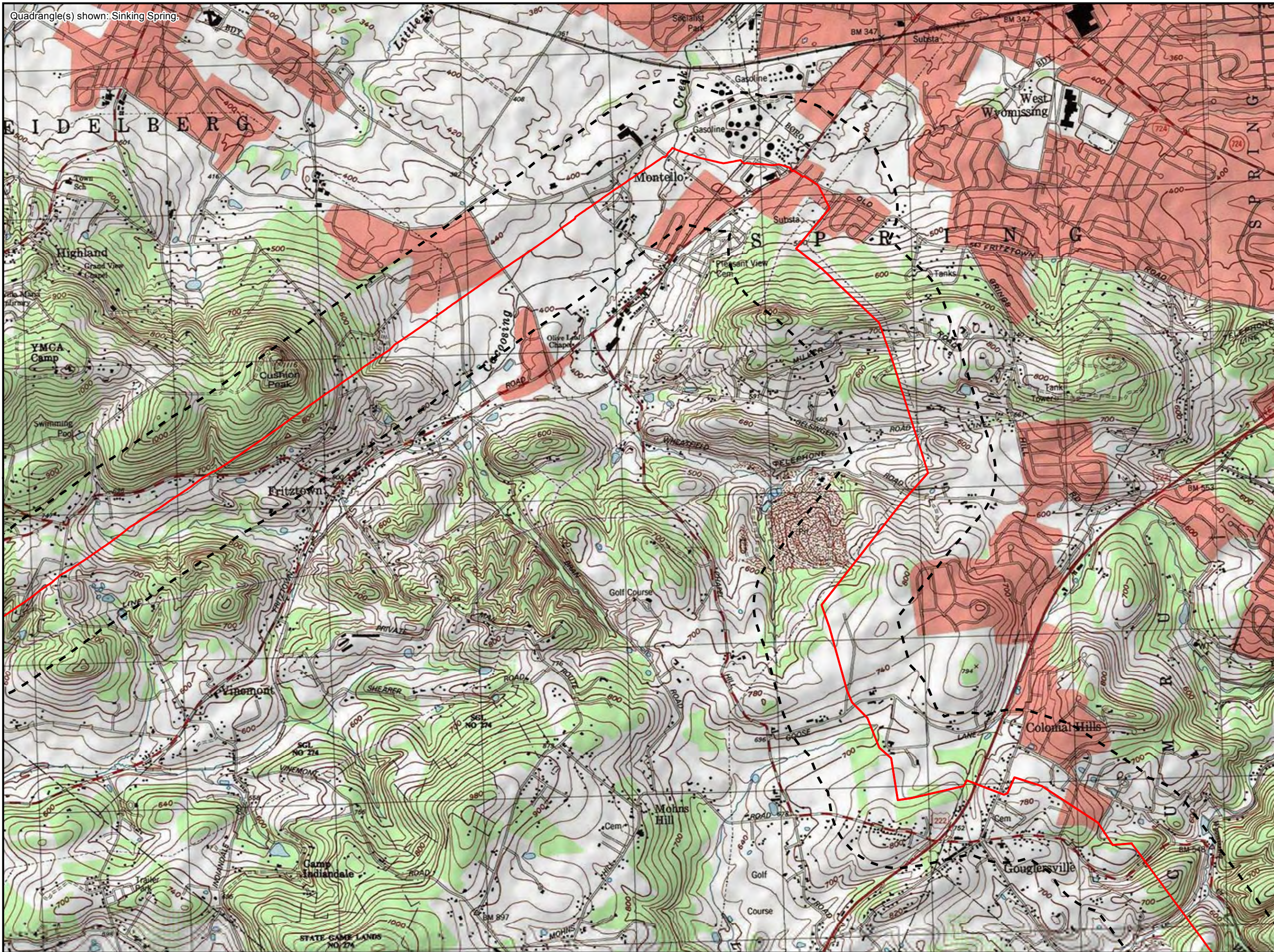
FIGURE 47
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
LANCASTER, BERKS COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Sinking Spring.



Legend
 1500 ft Buffer

Sheet Identifier

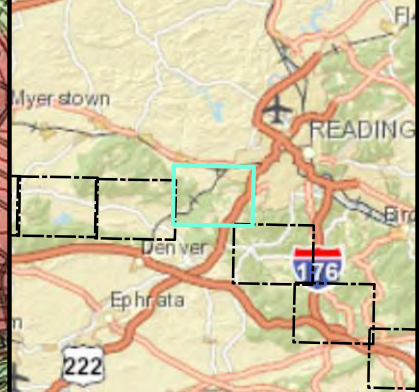


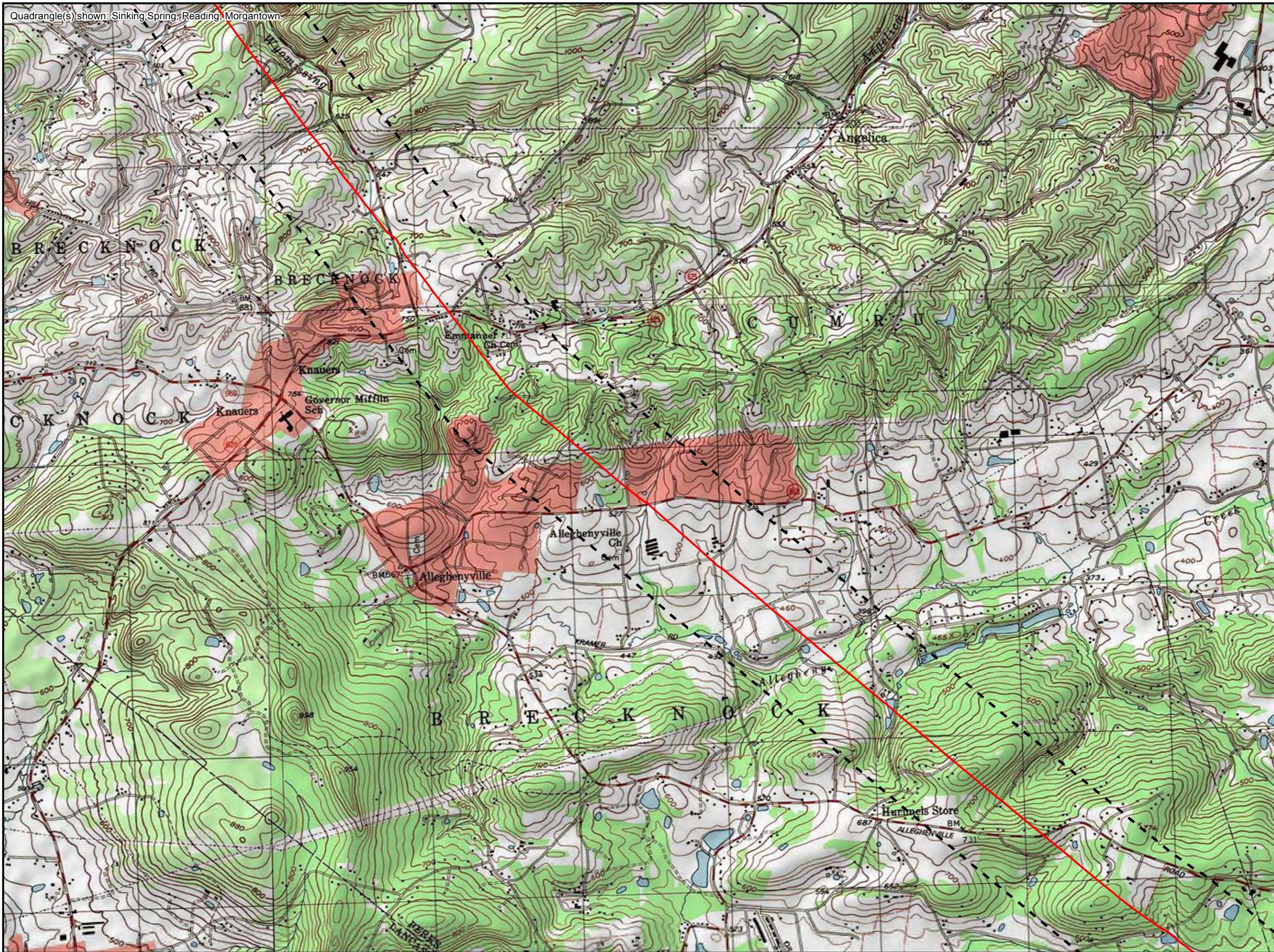
FIGURE 48
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
BERKS COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXPNDI_MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Sinking Spring, Reading, Morgantown.



Legend
 1500 ft Buffer

Sheet Identifier

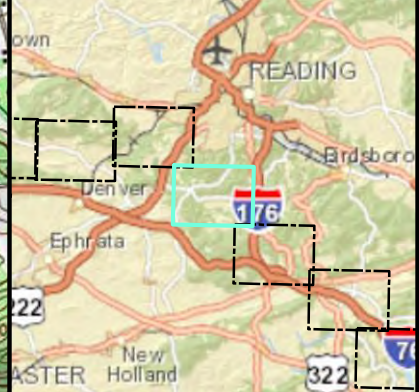


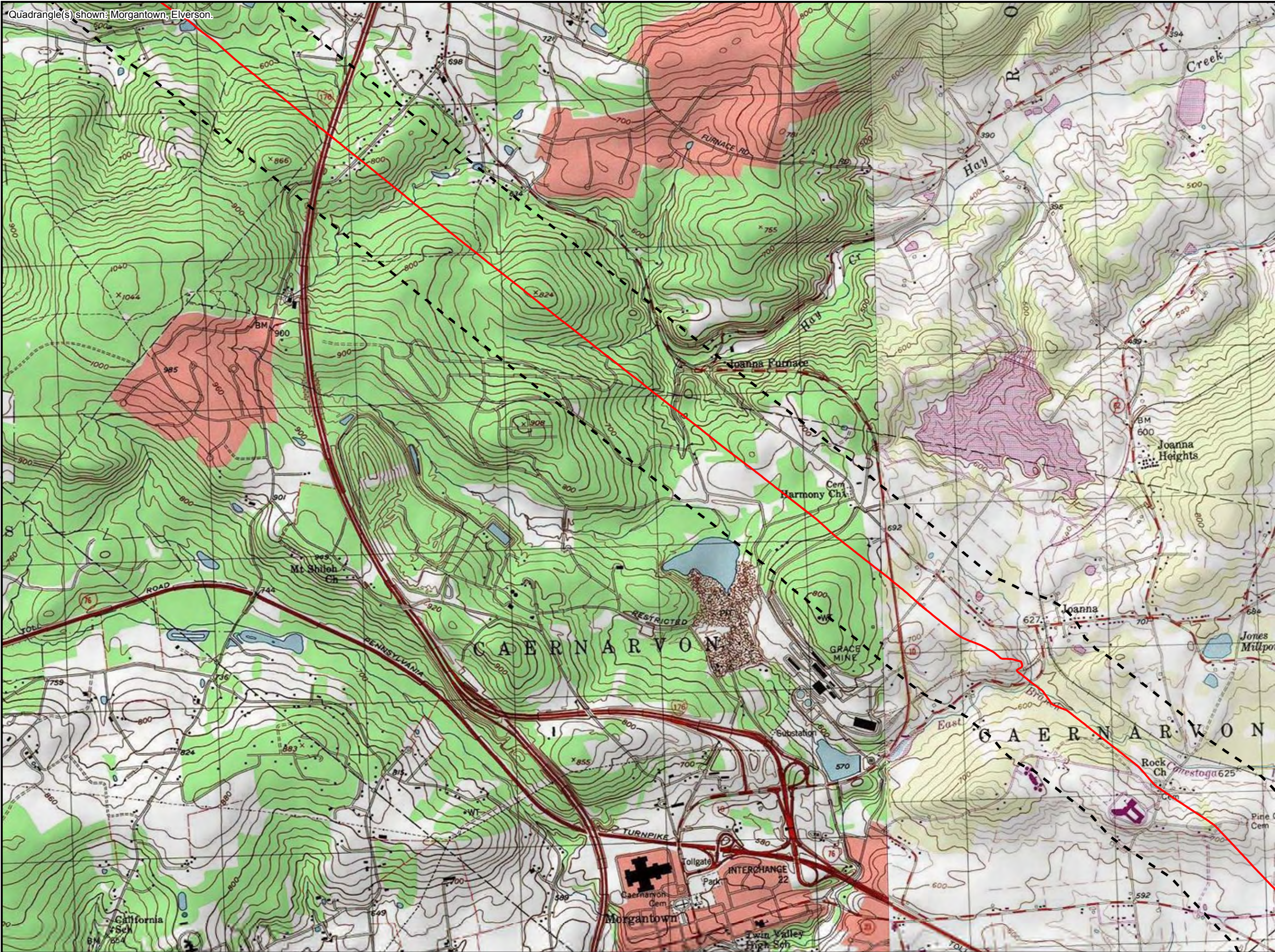
FIGURE 49
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
BERKS COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Morgantown, Elverson.



Legend
 [Dashed Box] 1500 ft Buffer

Sheet Identifier

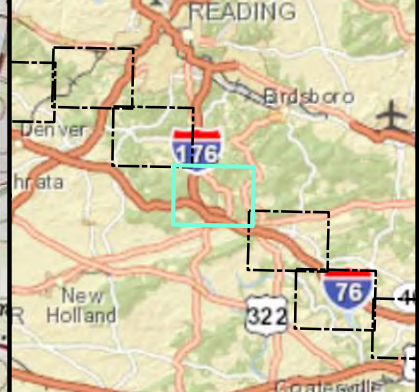


FIGURE 50
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
BERKS COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Elverson, Wagontown.



Legend
 1500 ft Buffer

Sheet Identifier

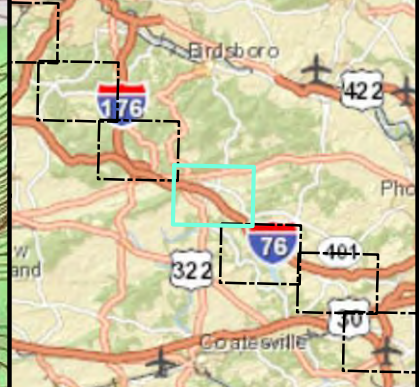


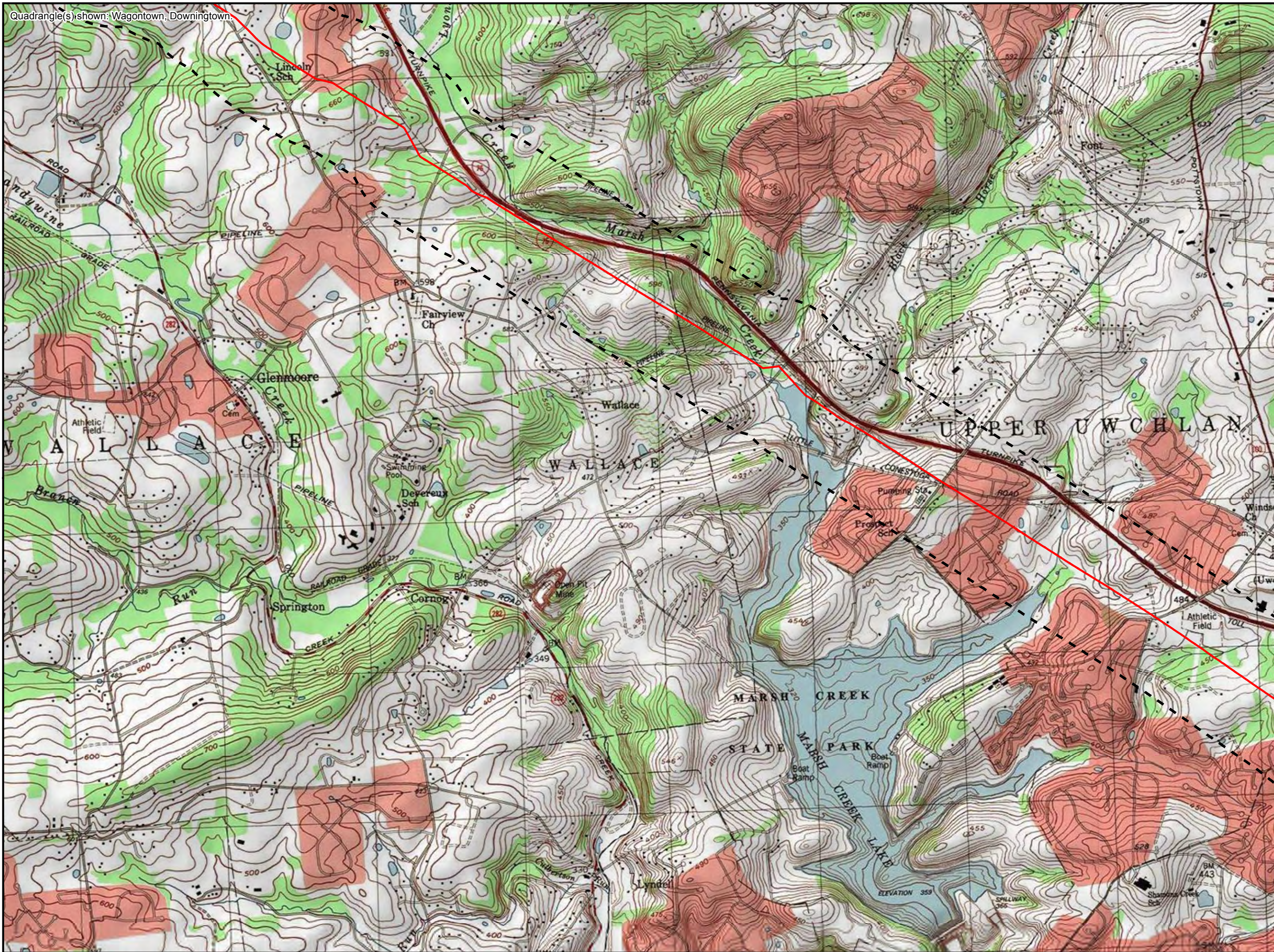
FIGURE 51
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
BERKS, CHESTER COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Wagontown, Downingtown.



Legend
1500 ft Buffer

Sheet Identifier

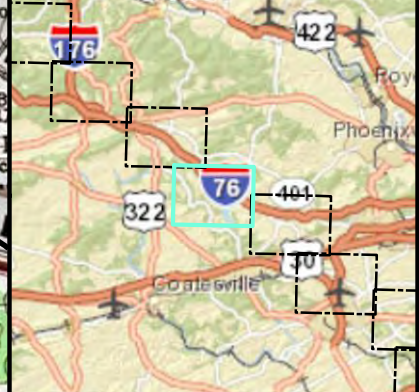


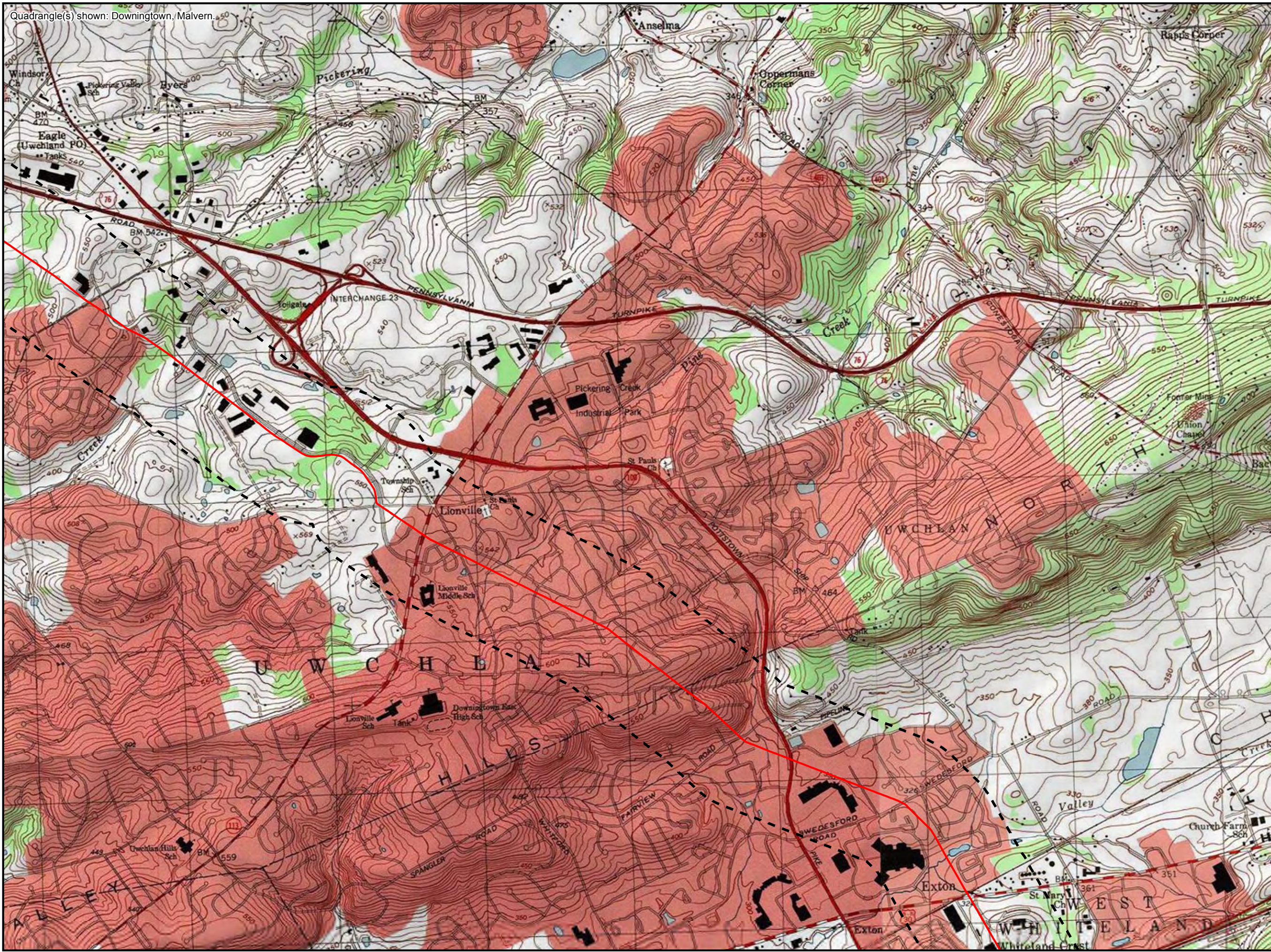
FIGURE 52
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CHESTER COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Downingtown, Malvern.



Legend
 1500 ft Buffer

Sheet Identifier

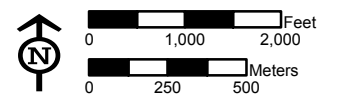
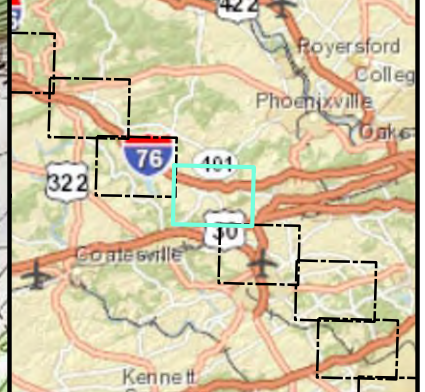


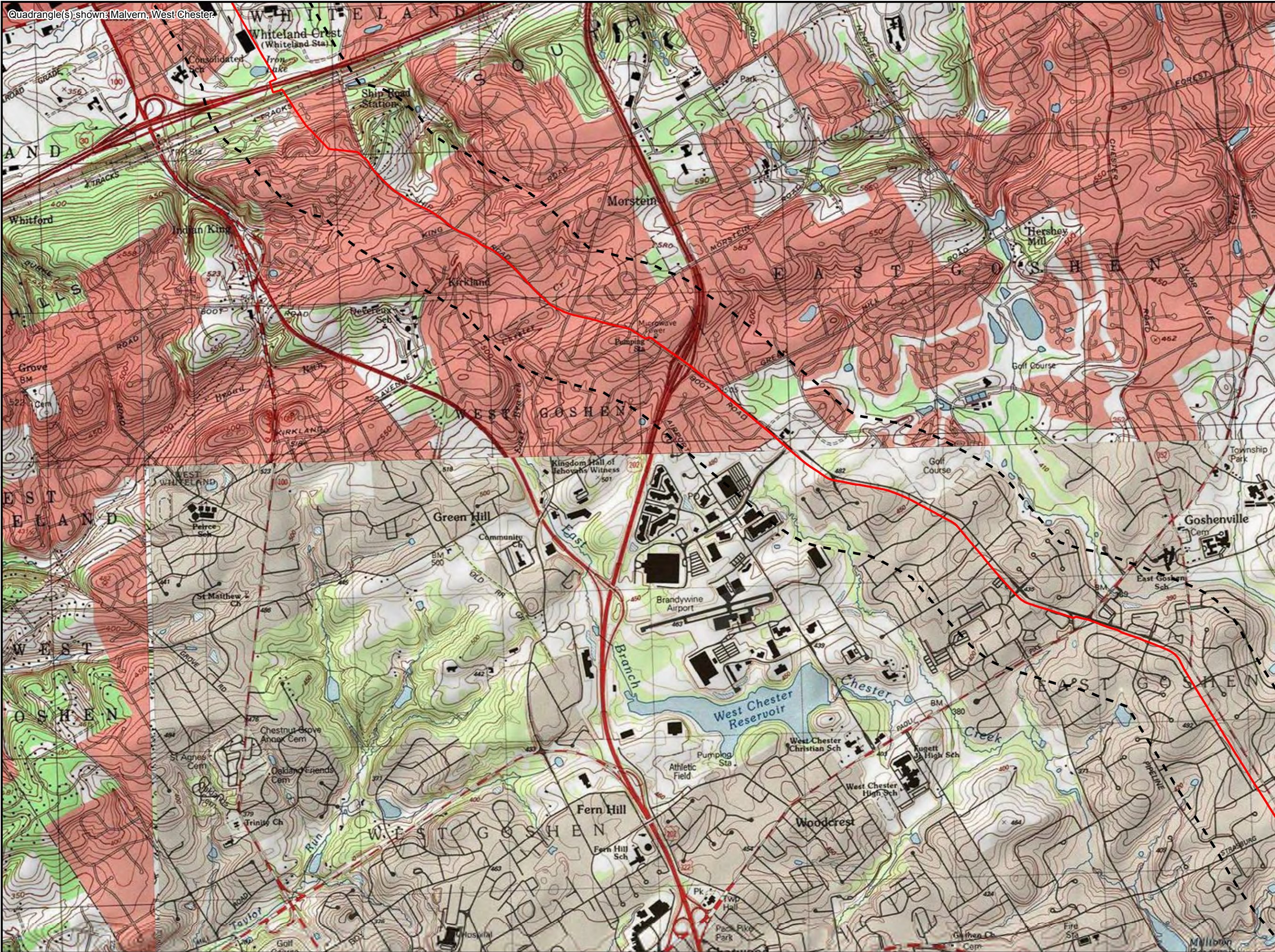
FIGURE 53
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CHESTER COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MIXMARNER_EAST2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Malvern, West Chester



Legend
 1500 ft Buffer

Sheet Identifier

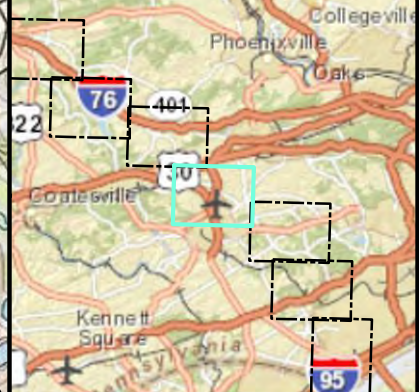


FIGURE 54
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CHESTER COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
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PGH_PGISUNOCOMARINER_EAST_2MIXMARNER_EAST2_PNDI_PA.MXD 11/2013 JN

Quadrangle(s) shown: West Chester, Media.



Legend
 1500 ft Buffer

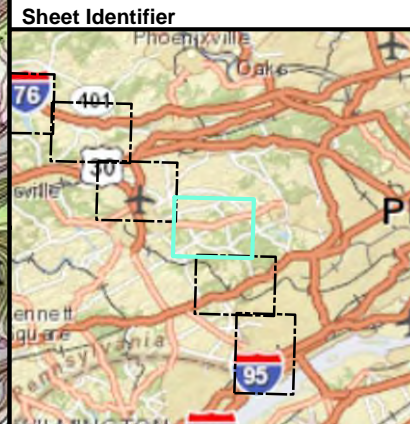


FIGURE 55
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
CHESTER, DELAWARE COUNTY, PA



Notes:
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 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

Quadrangle(s) shown: Media.



Legend
 1500 ft Buffer

Sheet Identifier

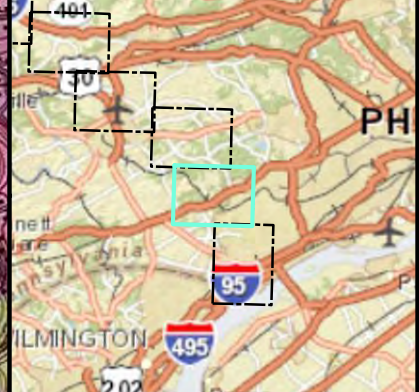


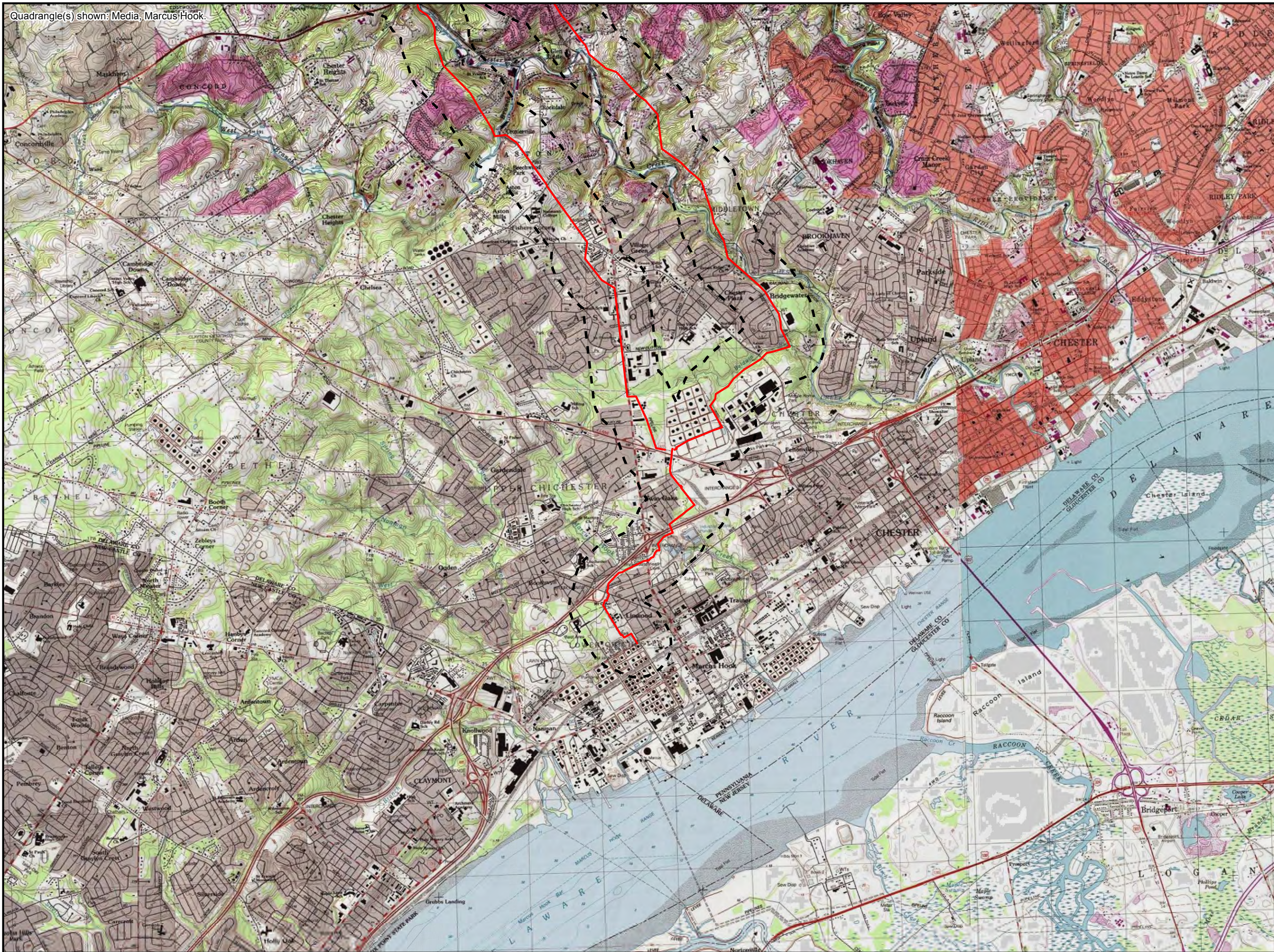
FIGURE 56
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
DELAWARE COUNTY, PA



Notes:
 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
 2) Coordinate system is NAD 83 State Plane Pennsylvania South

PGH_PGISUNOCO\MARINER EAST 2\MXD\MARINER EAST 2_PNDI_PA.MXD 11/2013 JN

Quadrangle(s) shown: Media, Marcus Hook.



Legend
 1500 ft Buffer

Sheet Identifier

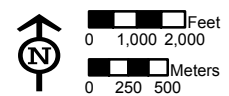


FIGURE 57
PNDI 1500' BOUNDARY
MARINER EAST 2
OCTOBER 22, 2013 ALIGNMENT
SUNOCO LOGISTICS, L.P.
DELAWARE COUNTY, PA



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 1) Topographic map provided by ESRI's ArcGIS Online USA Topo Maps map service (© 2013 National Geographic Society, i-cubed).
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PGH_PGISUNOCOMARINER_EAST_2MXD\MARINER_EAST_2_PNDI_PA.MXD 11/20/13 JN

TAB 6B

THREATENED/ENDANGERED SPECIES

**CORRESPONDENCE FROM, AND DOCUMENTATION OF ONGOING
COORDINATION WITH:**

PADCNR, PAFBC, PGC, AND USFWS

March 13, 2014

PNDI Number: 22275

Preston Smith

Tetra Tech

661 Andersen Drive

Pittsburgh, PA 15220

Email: preston.smith@tetrattech.com

**Re: UPDATE – PA Pipeline Project (Sunoco Mariner East 2 Pipeline)
Trans-Pennsylvania**

Dear Mr. Smith,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Project Number 22275 for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources of concern under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

Potential Impact Anticipated

PNDI records indicate species or resources under DCNR's jurisdiction are located in the project vicinity. Based on a detailed PNDI review, DCNR determined potential impacts to the following threatened or endangered species or species of special concern. (NOTE: E10^r of this update was deleted during review)

Plant Species of Concern:

Scientific Name	Common Name	PA Current Status	PA Proposed Status	AOC (West and East)
<i>Actaea podocarpa</i>	Mountain Bugbane	Threatened	Rare	W1 ^r
<i>Amelanchier canadensis</i>	Serviceberry	Not listed	Endangered	E21 ^r
<i>Amelanchier humilis</i>	Low Serviceberry	Undetermined	Endangered	W3 ^r
<i>Amelanchier sanguinea</i>	Roundleaf Serviceberry	Undetermined	Endangered	W3 ^r
<i>Andropogon gyrans</i>	Elliott's Bluestem	Not listed	Rare	E15 ^r , E16 ^r , E19 ^r , E20 ^r
<i>Arabis patens</i>	Spreading Rockcress	Not Listed	Threatened	W5 ^r
<i>Bartonia paniculata</i>	Screw-stem	Not listed	Rare	E21 ^r
<i>Bouteloua curtipendula</i>	Tall Gramma	Threatened	Threatened	E5 ^r
<i>Dicanthelium scoparium</i>	Velvety Panic-grass	Endangered	Endangered	E18 ^r
<i>Desmodium nuttallii</i>	Nuttall's Tick Trefoil	Unlisted	Threatened	E21 ^r
<i>Ellisia nyctelea</i>	Ellisia	Threatened	Threatened	E12 ^r , E14 ^r
<i>Euthamia tenuifolia</i>	Grass-leaved goldenrod	Threatened	Endangered	E21 ^r
<i>Gentiana saponaria</i>	Soapwort Gentian	Undetermined	Endangered	E23 ^r
<i>Juncus torreyi</i>	Torrey's Rush	Threatened	Rare	W4 ^r
<i>Leucothoe racemosa</i>	Swamp Dog-Hobble	Undetermined	Threatened	E24 ^r
<i>Lycopodiella margueritae</i>	Marguerite's Clubmoss	Not Listed	Endangered	W4 ^r
<i>Oenothera argillicola</i>	Shale-barren Evening-primrose	Threatened	Threatened	W6 ^r
<i>Oxypolis rigidior</i>	Stiff Cowbane	Undetermined	Threatened	E21 ^r
<i>Packera anonyma</i>	Plain ragwort	Threatened	Threatened	E5 ^r
<i>Phemeranthus teretifolius</i>	Round-leaved Fame-Flower	Threatened	Threatened	E4 ^r
<i>Poa autumnalis</i>	Autumn Bluegrass	Endangered	Endangered	E3 ^r , E21 ^r , E23 ^r
<i>Poa paludigena</i>	Bog Bluegrass	Threatened	Rare	E1 ^r
<i>Quercus phellos</i>	Willow Oak	Endangered	Endangered	E25 ^r
<i>Rotala ramosior</i>	Tooth-cup	Rare	Rare	E11 ^r
<i>Spiranthes vernalis</i>	Spring Ladies'-Tresses	Endangered	Endangered	E22 ^r

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<i>Thalictrum coriaceum</i>	Thick-leaved Meadow-rue	Endangered	Threatened	W5 ^r
<i>Tipularia discolor</i>	Cranefly Orchid	Rare	Rare	E17 ^r
<i>Trifolium virginicum</i>	Kate's Mountain Clover	Endangered	Endangered	W6 ^r
<i>Trillium cernuum</i>	Nodding Trillium	Not listed	Threatened	E1 ^r , E2 ^r , E4 ^r , E21 ^r
<i>Woodwardia areolata</i>	Netted chain fern	Unlisted	Threatened	E2 ^r , E19 ^r
<i>Zizania aquatica</i>	Indian Wild Rice	Rare	Rare	E6 ^r , E7 ^r , E8 ^r , E9 ^r , E11 ^r

Communities of Concern:

Community	Global Rank	State Rank	AOC
Red-cedar Mixed Hardwood Rich Shale Woodland	GNR	S1S2	(W6 ^r)

Please see the following resource for more information on these plant communities:

<http://www.naturalheritage.state.pa.us/fikebook.aspx>

Survey Request

DCNR requests a survey for the following species:

- ***Actaea podocarpa* (Mountain Bugbane)** locally documented in rich moist woods within stream valleys; prefers rich moist wooded slopes and coves in the mountains; flowers in August
- ***Amelanchier canadensis* (Serviceberry):** locally documented on three roadside areas—prefers moist woods and swamps—flowers mid April – mid May, fruits June – early July
- ***Amelanchier humilis* (Low Serviceberry)** locally documented on a steep rocky shrubby hillside; prefers dry open high ground and bluffs; flowers April – mid May; fruits June – early July
- ***Amelanchier sanguinea* (Roundleaf Serviceberry)** locally documented on a steep rocky shrubby hillside; prefers open woods, rocky slopes, and barrens; flowers mid April – late May; fruits June – early July
- ***Andropogon gyrans* (Elliott's Beardgrass)** locally documented in an old field on a north facing slope and also in a grassy power line cut in E20—prefers dry or moist fields or open woods—flowers in September – October
- ***Arabis patens* (Spreading Rockcress)** locally documented on a rocky wooded limestone slope; prefers moist rocky woods; flowers April – July
- ***Bartonia paniculata* (Screw-stem)** locally documented in an opening on the uphill side of the maintenance road—prefers bogs and peaty lake margins—flowers from August–October
- ***Bouteloua curtipendula* (Tall Gramma)**—locally documented in a small prairie serpentine barren with scattered Juniperus virginiana—prefers serpentine barrens, dry calcareous openings, and other dry, rocky, or sandy sites—flowers August–September
- ***Desmodium nuttallii* (Nuttall's Tick-trefoil)** locally documented on a NE-facing slope in partial light with dry-mesic moisture in middle of pipeline; prefers open woods and edges; flowers July–September
- ***Dicanthelium scoparium* (Velvety Panic-grass)** locally documented on the crest, mid-slope and lower-slope of an open meadow—prefers moist meadows and swales—vernal terminal panicles May-early July, or late summer or early fall
- ***Ellisia nyctelea* (Ellisia):** locally documented in a sand bar with no woody vegetation; prefers damp, shady stream banks with rich alluvial soils and sometimes in disturbed ground
- ***Euthamia tenuifolia* (Grass-leaved Goldenrod)** locally documented in a powerline ROW with woods on both sides—prefers moist sandy or clayey fields—flowers in July–October
- ***Gentiana saponaria* (Soapwort Gentian)** locally documented on a flat slope in shaded light with moist to saturated moisture; prefers moist open woods, roadsides and swamps; flowers in September – October
- ***Juncus biflorus* (Grass-leaved Rush);** locally documented on open marshy ground in bottomland along river; prefers open woods, boggy fields, gravel pits, and ditches; fruits July to early November

- ***Juncus torreyi* (Torrey's Rush)**: locally documented in abandoned sand mine pits and stone quarry wetlands; prefers muddy or sandy shores, strip mine areas, swales, and ditches; flowers and fruits early summer – fall
- ***Leucothoe racemosa* (Swamp Dog-hobble)**: locally documented in a youngish poorly drained wet woods with sweet gum and a sparse understory; prefers wet woods and thickets
- ***Lycopodiella margueritae* (Marguerite's Clubmoss)**: locally documented along stream edges associated with abandoned coal strip mines and damp sandy open ground within abandoned sand mines; prefers bogs and moist acidic soils; deciduous, sporulates July – October
- ***Oenothera argillicola* (Shale-barren Evening-primrose)** locally documented on a riverside shale barren; prefers shale barrens; flowers July – September
- ***Oxypolis rigidior* (Stiff Cowbane)** locally documented in a wedge of woods between road and a ROW with a small stream—prefers swamps, bogs, sedge meadows, sandy shores, and abandoned railroad beds—flowers from August – September
- ***Packera anonyma* (Plain Ragwort)** locally documented in a small attractive serpentine prairie; prefers dry fields, open woods, and serpentine barrens; flowers May–September
- ***Phemeranthus teretifolius* (Round-leaved Fame Flower)** locally documented in a small attractive serpentine prairie; prefers serpentine barrens; flowers late June-July and flowers are known to remain open only for a few hours
- ***Poa autumnalis* (Autumn Bluegrass)** locally documented floodplain woods, open at ground, with alluvial soils—prefers moist woods—flowers in late May-June
- ***Poa paludigena* (Bog Bluegrass)** locally documented in a scrub shrub/red maple sapling wetland—prefers boggy woods and swamps—flowers late May-June
- ***Quercus phellos* (Willow Oak)** locally documented in a coastal plain forest; prefers moist to wet woods within Coastal Plain forests in SE PA; survey during growing season before leaf fall
- ***Rotala ramosior* (Tooth-cup)** locally documented in a floodplain of Yellow Breeches Creek; prefers wet sandy shores and other swampy open grounds
- ***Spiranthes vernalis* (Spring Ladies'-tresses)**: locally documented in a grassy opening in an old field remnant in young sweet gum-red maple woods—prefers moist, open sandy soils and serpentine barrens—flowers in May – August
- ***Symphotrichum depauperatum* (Serpentine Aster)** locally documented in an open serpentine barren; prefers open areas of serpentine barrens; flowers August–October
- ***Thalictrum coriaceum* (Thick-leaved Meadow-rue)** locally documented on wooded slopes; prefers rich rocky woods, thickets, moist alluviums; flowers late May – June
- ***Trifolium virginicum* (Kate's Mountain Clover)** locally documented on a riverside shale barren; prefers shale barrens; flowers May – August
- ***Trillium cernuum* (Nodding Trillium)** locally documented on a moist, lower slope: prefers moist woods, also documented in a mesic hardwood forest in E19; flowers April-May
- ***Woodwardia areolata* (Netted Chainfern)** locally documented in a small artificial pond in the woods with little herbaceous vegetation, in E19 the plant was found in the eastern edge of a seep; prefers moist or wet woods and acidic bogs; deciduous fern, sporulates July-September
- ***Zizania aquatica* (Indian Wild-rice)** locally documented in a 2 acre monoculture marsh in the wettest area of the marsh—prefers tidal and non-tidal marshes—flowers in late May – early September

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- ✓ A survey for the above species should be conducted by a qualified botanist *at the appropriate time of year and then submitted to our office for review*. **Your botanist should carefully review the new DCNR Botanical Survey Protocols available at <http://www.gis.dcnr.state.pa.us/hgis-er/Login.aspx>. These protocols are recommended to ensure that the all necessary information is collected and that survey reports are prepared properly. It is the expectation of DCNR that these protocols will be followed when conducting surveys for species under our jurisdiction.**
- ✓ Your botanist should *fill out the field survey form while performing their survey*: <http://www.gis.dcnr.state.pa.us/hgis-er/hgis/2012%20DCNR%20Field%20Survey%20Form.pdf>. Contact our office prior to the survey for detailed information about the species, or for a list of qualified surveyors.
- ✓ Any target and non-target state-listed species found during the site visit should be reported to our office. Mitigation measures and monitoring may be requested if species or communities of special concern are found on or adjacent to site.
- ✓ If the land type(s) does not exist on site, a survey may not be necessary; please submit a habitat assessment report which describes the current land cover, habitat types, and species found on site.

IMPORTANT:

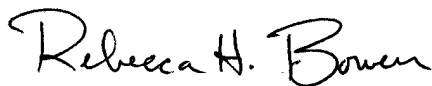
To assist with your botanical survey efforts, we are providing shapefiles of Areas of Concern (AOCs). These polygons are based on known locations or potential habitat of DCNR-regulated species or natural communities. Required surveys may be restricted to these AOCs. The survey may be further refined to suitable habitat within areas of anticipated disturbance. For example, if work is restricted to an existing open right-of-way, a survey for a forest-dwelling species would be unnecessary.

Plant communities and species that lack a currently listed or proposed conservation status are not required for survey. Surveys for these communities and species are voluntary. This applies to Red-cedar – Mixed Hardwood Rich Shale Woodland.

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter, please resubmit the project to this agency as an “Update” (including an updated PNDI receipt, project narrative and accurate map). As a reminder, this finding applies to potential impacts under DCNR’s jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth’s other resource agencies for environmental review.

Should you have any questions or concerns, please contact Ecological Information Specialists, Jason Ryndock (717-705-2822; c-jryndock@pa.gov) or Frederick Sechler (717-705-2823; c-frsechle@pa.gov).

Sincerely,



Rebecca H. Bowen, Section Chief
Bureau of Forestry, Ecological Services Section
Pennsylvania Natural Heritage Program

January 30, 2014

PNDI Number: 22275

Preston Smith

Tetra Tech

661 Andersen Drive

Pittsburgh, PA 15220

Email: preston.smith@tetrattech.com

**Re: Sunoco Mariner East 2 Pipeline
Trans-Pennsylvania**

Dear Mr. Smith,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Project Number 22024 for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources of concern under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only. **The proposed project will affect State Forest Lands within the Gallitzin State Forest District.** Further coordination with the Bureau of Forestry is required (see "Projects on State Forest Lands").

Potential Impact Anticipated

PNDI records indicate species or resources under DCNR's jurisdiction are located in the project vicinity. Based on a detailed PNDI review, DCNR determined potential impacts to the following threatened or endangered species or species of special concern.

Plant Species of Concern:

Scientific Name	Common Name	PA Current Status	PA Proposed Status	AOC (West and East)
<i>Actaea podocarpa</i>	Mountain Bugbane	Threatened	Rare	W10, W11
<i>Amelanchier humilis</i>	Low Serviceberry	Undetermined	Endangered	W12
<i>Amelanchier sanguinea</i>	Roundleaf Serviceberry	Undetermined	Endangered	W12
<i>Antennaria virginica</i>	Shale Barren Pussytoes	Not Listed	Rare	W14
<i>Arabis patens</i>	Spreading Rockcross	Not Listed	Threatened	W15
<i>Asplenium pinnatifidum</i>	Lobed Spleenwort	Not Listed	Rare	W6
<i>Astragalus canadensis</i>	Canadian Milkvetch	Not Listed	Undetermined	(W6)
<i>Baptisia australis</i>	Blue False-indigo	Not Listed	Threatened	W3
<i>Carex aquatilis</i>	Water Sedge	Threatened	Threatened	E14
<i>Carex shortiana</i>	Short's Sedge	Not Listed	Rare	W1, E1
<i>Delphinium exaltatum</i>	Tall Larkspur	Endangered	Endangered	W6
<i>Desmodium nuttallii</i>	Nuttall's Tick Trefoil	Unlisted	Threatened	E17
<i>Dryopteris celsa</i>	Log Fern	Unlisted	Endangered	E15
<i>Ellisia nyctelea</i>	Ellisia	Threatened	Threatened	E12, E13
<i>Erythronium albidum</i>	White Trout-lily	Not Listed	Undetermined	(W3), (W6)
<i>Fimbristylis annua</i>	Annual Fimbr	Threatened	Threatened	E18, E19, E21
<i>Gentiana saponaria</i>	Soapwort Gentian	Undetermined	Endangered	E20, E22
<i>Iodanthus pinnatifidus</i>	Purple Rocket	Endangered	Endangered	W3, W4, W6
<i>Juncus biflorus</i>	Grass-leaved Rush	Undetermined	Threatened	E20, E22
<i>Juncus torreyi</i>	Torrey's Rush	Threatened	Rare	W6, W11, W13
<i>Leucothoe racemosa</i>	Swamp Dog-Hobble	Undetermined	Threatened	E20, E22
<i>Lycopodiella margueritae</i>	Marguerite's Clubmoss	Not Listed	Endangered	W11, W13
<i>Oenothera argillicola</i>	Shale-barren Evening-primrose	Threatened	Threatened	W16
<i>Opuntia humifusa</i>	Eastern Prickly Pear-Cactus	Rare	Rare	E5, E6, E7, E8

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<i>Packera anonyma</i>	Plain ragwort	Threatened	Threatened	E18, E19, E21
<i>Passiflora lutea</i>	Yellow Passion-flower	Endangered	Threatened	W6
<i>Penstemon canescens</i>	Beardtongue	Not listed	Undetermined	(E3), (E4)
<i>Phemeranthus teretifolius</i>	Round-leaved Fame-Flower	Threatened	Threatened	E18, E19, E21
<i>Platanthera peramoena</i>	Purple-fringeless Orchid	Undetermined	Threatened	W9
<i>Polygama polygala</i>	Racemed Milkwort	Undetermined	Endangered	E2
<i>Quercus phellos</i>	Willow Oak	Endangered	Endangered	E20, E22
<i>Ribes missouriensis</i>	Missouri Gooseberry	Endangered	Endangered	E3
<i>Rotala ramosior</i>	Tooth-cup	Rare	Rare	E9, E10, E11
<i>Ruellia pedunculata</i>	Stalked wild-petunia	Not listed	Undetermined	(E4)
<i>Ruellia strepens</i>	Limestone Petunia	Threatened	Threatened	E3, E4, E8
<i>Smallanthus uvedalius</i>	Hairy Leafcup	Not Listed	Rare	W6
<i>Solidago erecta</i>	Slender Goldenrod	Endangered	Endangered	E6
<i>Spiranthes lucida</i>	Shining Ladies'-tresses	Not Listed	Threatened	W9
<i>Symphotrichum depauperatum</i>	Serpentine Aster	Threatened	Threatened	E18, E19, E21
<i>Thalictrum coriaceum</i>	Thick-leaved Meadow-rue	Endangered	Threatened	W8, W15
<i>Trifolium virginicum</i>	Kate's Mountain Clover	Endangered	Endangered	W16
<i>Trillium nivale</i>	Snow Trillium	Rare	Rare	W2, W5, W6, W7
<i>Woodwardia areolata</i>	Netted chain fern	Unlisted	Threatened	E15

Communities of Concern:

Community	Global Rank	State Rank	AOC
Red-cedar Mixed Hardwood Rich Shale Woodland	GNR	S1S2	(W16)
Serpentine Grassland	GNR	S1	(E18), (E19), (E21)
Yellow Oak – Redbud Woodland	GNR	S2	(W6)

Please see the following resource for more information on these plant communities:

<http://www.naturalheritage.state.pa.us/fikebook.aspx>

Survey Request

DCNR requests a survey for the following species:

- ***Actaea podocarpa* (Mountain Bugbane):** locally documented in rich moist woods within stream valleys; prefers rich moist wooded slopes and coves in the mountains; flowers in August
- ***Amelanchier humilis* (Low Serviceberry):** locally documented on a steep rocky shrubby hillside; prefers dry open high ground and bluffs; flowers April – mid May; fruits June – early July
- ***Amelanchier sanguinea* (Roundleaf Serviceberry):** locally documented on a steep rocky shrubby hillside; prefers open woods, rocky slopes, and barrens; flowers mid April – late May; fruits June – early July
- ***Antennaria virginica* (Shale Barren Pussytoes):** locally documented on a dry open shale bank; prefers dry woods and openings; flowers late April – June
- ***Arabis patens* (Spreading Rockcress):** locally documented on a rocky wooded limestone slope; prefers moist rocky woods; flowers April – July
- ***Asplenium pinnatifidum* (Lobed Spleenwort):** locally documented on a vertical slope; prefers crevices of dry lightly shaded cliffs of noncalcareous rocks; evergreen
- ***Astragalus canadensis* (Canadian Milkvetch):** locally documented on a steep limey outcrop; prefers rocky roadside banks, limestone ledges, and shale barrens; flowers late June – early August
- ***Baptisia australis* (Blue False-indigo):** locally documented on a deciduous forest slope; prefers open woods, stream banks, and sandy floodplains; flowers May – June
- ***Carex aquatilis* (Water Sedge):** locally documented in an open seep; prefers marshy swales in more calcareous areas
- ***Carex shortiana* (Short's Sedge):** locally documented in a sedge-graminoid wet meadow; prefers calcareous wet meadows, swamps, and rich woods; fruits May – late July

- ***Delphinium exaltatum* (Tall Larkspur)**: locally documented dry calcareous forest slopes; prefers rich shaded woods and rocky limestone bluffs; flowers July – August
- ***Desmodium nuttallii* (Nuttall's tick-trefoil)**: locally documented on a NE-facing slope in partial light with dry-mesic moisture in middle of pipeline; prefers open woods and edges; flowers July-September
- ***Dryopteris celsa* (Log Fern)**: locally documented in a wet thicket along brook on steep rocky slope; prefers seepage slopes, hummocks, and logs in swamps; survey summer-fall
- ***Ellisia nyctelea* (Ellisia)**: locally documented on a xeric flat lower slope with open partial light; prefers damp, shady stream banks with rich alluvial soils and sometimes in disturbed ground
- ***Erythronium albidum* (White Trout-lily)**: locally documented on wooded slopes and in riparian forest; prefers moist woods and rich slopes, especially on limestone; flowers April – May
- ***Fimbristylis annua* (Annual Fimbry)**: locally documented in a moist swale area along ridge; prefers moist depressions on serpentine barrens; flowers and fruits from July–October
- ***Gentiana saponaria* (Soapwort Gentian)**: locally documented on a flat slope in shaded light with moist to saturated moisture; prefers moist open woods, roadsides and swamps; flowers in September - October
- ***Iodanthus pinnatifidus* (Purple Rocket)**: locally documented on rich wooded slopes; prefers moist alluvial woods and wooded slopes; flowers May – June
- ***Juncus biflorus* (Grass-leaved Rush)**: locally documented in an open, flat crest in moist mesic shrub meadow along pipeline; prefers open woods, boggy fields, gravel pits, and ditches; fruits July to early November
- ***Juncus torreyi* (Torrey's Rush)**: locally documented in abandoned sand mine pits and stone quarry wetlands; prefers muddy or sandy shores, strip mine areas, swales, and ditches; flowers and fruits early summer – fall
- ***Leucothoe racemosa* (Swamp Dog-hobble)**: locally documented in a youngish poorly drained wet woods with sweet gum and a sparse understory; prefers wet woods and thickets
- ***Lycopodiella margueritae* (Marguerite's Clubmoss)**: locally documented along stream edges associated with abandoned coal strip mines and damp sandy open ground within abandoned sand mines; prefers bogs and moist acidic soils; deciduous, sporulates July – October
- ***Oenothera argillicola* (Shale-barren Evening-primrose)**: locally documented on a riverside shale barren; prefers shale barrens; flowers July – September
- ***Packera anonyma* (Plain Ragwort)**: locally documented on a ridge in a serpentine barren; prefers dry fields, open woods, and serpentine barrens; flowers May–September
- ***Passiflora lutea* (Yellow Passion-flower)**: locally documented along the edge of a mixed hardwood forest; prefers most stream bank thickets; flowers in July
- ***Penstemon canescens* (Beard-tongue)**: locally documented in a Virginia Pine-mixed hardwood shale woodland opening on steep forested WSW facing slopes; prefers dry, rocky, wooded slopes; flowers May-July, fruits July – August.
- ***PheMERanthus teretifolius* (Round-leaved Fame Flower)**: locally documented in 20 acres of prairie, outcrop, and damp sandy community; prefers serpentine barrens; flowers late June-July and flowers are known to remain open only for a few hours
- ***Platanthera peramoena* (Purple-fringeless Orchid)**: locally documented on swampy woodland ground; prefers moist meadows, low wet woods, and ditches; flowers July – August

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- ***Polygala polygama* (Racemed Milkwort)**: locally documented between two pipeline rights-of-way; prefers abandoned fields and wooded bogs; flowers June-July
 - ***Quercus phellos* (Willow Oak)**: locally documented in a coastal plain forest; prefers moist to wet woods within Coastal Plain forests in SE PA; survey during growing season before leaf fall
 - ***Ribes missouriensis* (Missouri Gooseberry)**: locally documented on a west-facing xeric shale slope; prefers wooded slopes; flowers late April-May
 - ***Rotala ramosior* (Tooth-cup)**: locally documented in a floodplain of Yellow Breeches Creek; prefers wet sandy shores and other swampy open grounds
 - ***Ruellia pedunculata* (Stalked Wild-petunia)**: locally documented on a xeric SE-facing slope in open to partial light; prefers dry rocky woods, ravines, lowlands, glades, and slopes; flowers June-August
 - ***Ruellia strepens* (Limestone petunia)**: locally documented in a Virginia Pine-mixed hardwood shale woodland opening on steep forested WSW facing slopes; prefers rich wooded slopes, bluffs, and roadsides on limestone
 - ***Smallanthus uvedalius* (Hairy Leafcup)**: locally documented in early successional woodland; prefers ravines, thickets, and river or stream banks; flowers July – September
 - ***Solidago erecta* (Slender Goldenrod)**: locally documented on a SW facing slope in partial light in xeric soil; prefers dry, acidic shaley banks; flowers late August–October
 - ***Spiranthes lucida* (Shining Ladies'-tresses)**: locally documented within an upland wetland; prefers moist banks, lake shores, and wet meadows, usually on calcareous soils; flowers May – July
 - ***Symphyotrichum depauperatum* (Serpentine Aster)**: locally documented in an open serpentine barren; prefers open areas of serpentine barrens; flowers August–October
 - ***Thalictrum coriaceum* (Thick-leaved Meadow-rue)**: locally documented on wooded slopes; prefers rich rocky woods, thickets, moist alluviums; flowers late May – June
 - ***Trifolium virginicum* (Kate's Mountain Clover)**: locally documented on a riverside shale barren; prefers shale barrens; flowers May – August
 - ***Trillium cernuum* (Nodding Trillium)**: locally documented on a moist, lower slope: prefers moist woods; flowers April-May
 - ***Trillium nivale* (Snow Trillium)**: locally documented on wooded stream valley slopes, often with limestone float; prefers moist woods; flowers late March – April
 - ***Woodwardia areolata* (Netted Chainfern)**: locally documented in a small forested pond at headwaters of stream in seepy deciduous woods; prefers moist or wet woods and acidic bogs; deciduous fern, sporulates July-September
- ✓ A survey for the above species should be conducted by a qualified botanist *at the appropriate time of year and then submitted to our office for review*. **Your botanist should carefully review the new DCNR Botanical Survey Protocols available at <http://www.gis.dcnr.state.pa.us/hgis-er/Login.aspx>. These protocols are recommended to ensure that the all necessary information is collected and that survey reports are prepared properly. It is the expectation of DCNR that these protocols will be followed when conducting surveys for species under our jurisdiction.**
 - ✓ Your botanist should *fill out the field survey form while performing their survey*: <http://www.gis.dcnr.state.pa.us/hgis-er/hgis/2012%20DCNR%20Field%20Survey%20Form.pdf>. Contact our office prior to the survey for detailed information about the species, or for a list of qualified surveyors.
 - ✓ Any target and non-target state-listed species found during the site visit should be reported to our office. Mitigation measures and monitoring may be requested if species or communities of special concern are found on or adjacent to site.

- ✓ If the land type(s) does not exist on site, a survey may not be necessary; please submit a habitat assessment report which describes the current land cover, habitat types, and species found on site.

IMPORTANT:

To assist with your botanical survey efforts, we are providing shapefiles of Areas of Concern (AOCs). These polygons are based on known locations or potential habitat of DCNR-regulated species or natural communities. Required surveys may be restricted to these AOCs. The survey may be further refined to suitable habitat within areas of anticipated disturbance. For example, if work is restricted to an existing open right-of-way, a survey for a forest-dwelling species would be unnecessary.

Plant communities and species that lack a currently listed or proposed conservation status are not required for survey. Surveys for these communities and species are voluntary. This applies to Red-cedar – Mixed Hardwood Rich Shale Woodland, Serpentine Grassland, and Yellow Oak – Redbud Woodland, as well as *Astragalus canadensis*, *Erythronium albidum*, *Penstemon canescens*, and *Ruellia pedunculata*.

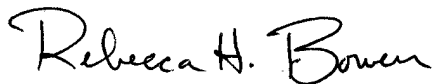
PROJECTS ON STATE FOREST LANDS:

A portion of this project takes place on the Gallitzin State Forest (District 6). The DCNR Bureau of Forestry's *State Forest Resource Management Plan* sets forth guidelines for ecologically-sound management of State Forest Lands and resources including protection of wetlands, wildlife, native wild plants and invasive species management. As such, the DCNR Bureau of Forestry may request additional surveys in association with this project. **This letter applies to PNDI impacts only and does not authorize the initiation of any work on State Forest Lands. Further coordination with the Bureau of Forestry is required.** If you have not already done so, please contact Terence Stemmler, District Forester for Gallitzin State Forest, at (814) 472-1862 for additional information.

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative and accurate map). As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

Should you have any questions or concerns, please contact Ecological Information Specialists, Jason Ryndock (717-705-2822; c-jryndock@pa.gov) or Frederick Sechler (717-705-2823; c-frsechle@pa.gov).

Sincerely,



Rebecca H. Bowen, Section Chief
Bureau of Forestry, Ecological Services Section
Pennsylvania Natural Heritage Program

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**Sunoco Pipeline, L.P. Proposed Pennsylvania Pipeline Project
RTE Plants Preliminary Results Review
Meeting with PA Department of Conservation & Natural Resources**

**Thursday, April 16, 2015
2:00 PM**

Location:

PA Department of Conservation & Natural Resources
Bureau of Forestry | Natural Heritage Section
400 Market Street | Harrisburg, PA 17105

Attendees:

PADCNR:

- Jason Ryndock – Ecological Information Specialist, PA DCNR, Bureau of Forestry, Natural Heritage Section (c-jryndock@pa.gov)
- Frederick C. Sechler Jr – Ecological Information Specialist, PA DCNR, Bureau of Forestry, Natural Heritage Section (c-frsechle@pa.gov)

Tetra Tech, Inc.

- Preston Smith – Natural Resources Lead (Preston.Smith@tetrattech.com)
 - Korey McCluskey – Botanical Lead (Korey.McCluskey@tetrattech.com)
 - Robin Dingle – Stream/Wetland permitting (Robin.Dingle@tetrattech.com)
-

GENERAL MEETING MINUTES

1) Introductions

- a. Introductions were made.

2) Consultation History

- a. A general recap of the large project and alternate route PNDI search requests for the PPP was discussed.
- b. The inclusion of the Marine East Pipeline – Houston to Delmont PA DCNR Approved Botanical Survey Report (dated July 2013) was deemed permissible and sufficient for the portion of PPP that lies within the same survey corridor as ME1 by both Fredrick and Jason. The 2013 botanical survey is only valid for this use for 2 years after its approval date and an extension request would be needed after that date.
- c. Small MOCs or alterations to the alignment since last coordination with PA DCNR were discussed.

3) Google Earth File Review: Survey Areas and Confirmed Occurrences

- a. A Google Earth 2014 field investigation file review of the identified species of special concern (SOSC) was discussed by individual occurrences.
- b. Individual SOSC occurrences, their locations, population numbers, and current and proposed PA status were discussed while examining the Google Earth data.
- c. Photographs of identified SOSC were shared with Jason and Fredrick.

4) Avoidance, Minimization, and Restoration

- a. The following items regarding each specific SOSC were discussed and are summarized in the attached 2014 Survey Year Identified RTE Population Table:
 - i. **Nine (8) of the thirteen (13) SOSCs identified are anticipated to be avoided utilizing Best Management Practices (BMPs) such as, but not limited to,**



neck downs of the LOD or access roads, slight shifting of the pipeline placement within the current LOD, or HDD boring.

1. The SOSCs that are anticipated to be avoided are: Racemed Milkwort (*Polygala polygama*), Prickly-pear cactus (*Opuntia humifusa*), Nuttall's Tick Trefoil (*Desmodium nuttallii*), Round-leaved Fame-Flower (*Phemeranthus teretifolius*), Plain ragwort (*Packera anonyma*), Mountain Bugbane (*Actaea podocarpa*), Northeastern Bulrush (*Scirpus ancistrochaetus*).
 - a. Preliminary discussions regarding recommendation and avoidance measures were based on the Current and Proposed PA status of the SOSC (PA DCNR uses the proposed status to make their determinations), the practicality for avoidance measures to be taken, the number of populations and numbers of individuals within those populations of SOSCs, relative tolerances to disturbance activities, among others variables (i.e. other impacts to wetlands, streams, and other resources/wildlife).
 - b. Jason and Fredrick of the PA DCNR are aware of the intent to utilize BMPs and avoidance measures in an effort to avoid the 8 SOSCs listed above.
- ii. **Three (3) of the thirteen (13) SOSCs identified are anticipated to be minimally impacted: Appalachian Blue Violet (*Viola appalachiensis*), Bushy Bluestem (*Andropogon glomeratus*), and Short's Sedge (*Carex shortiana*).**
 - a. Preliminary discussions regarding recommendation and avoidance measures were based on the Current and Proposed PA status of the SOSC, the practicality for avoidance measures to be taken, the number of populations and numbers of individuals within those populations of SOSCs, relative tolerances to disturbance activities, among others variables (i.e. other impacts to wetlands, streams, and other resources/wildlife).
 - b. The majority of the populations of these three SOSCs were identified either outside of or along the edge of the current LOD. BMPs to minimize anticipated impacts to the populations located within the LOD will be implemented where practical.
 - c. Jason and Fredrick of the PA DCNR are aware of the intent to minimize impacts and utilize avoidance measures in regards to the *Viola appalachiensis*, *Andropogon glomeratus*, and *Carex shortiana* populations.
- iii. **Two (2) of the thirteen (13) SOSCs identified are anticipated to be moderately impacted: Shale Barren Pussytoes (*Antennaria virginica*) and Missouri Gooseberry (*Ribes missouriense*).**
 - a. Preliminary discussions regarding minimization and avoidance measures were based on the Current and Proposed PA status of the SOSC, the practicality for avoidance measures to be taken, the number of populations and numbers of individuals within those populations of SOSCs, relative tolerances to disturbance activities, among others variables (i.e. other impacts to wetlands, streams, and other resources/wildlife).
 - b. The majority of the populations of these two SOSCs were identified either inside of or along the edge of the current LOD.

BMPs to minimize anticipated impacts to the populations located within the LOD will be implemented where practical.

- c. Large population areas, large numbers of individuals within the identified populations, relative tolerances to disturbances, and probable (but unknown) extent of suitable habitat were all factors considered during the discussions regarding the moderate anticipated impacts.
- d. Jason and Fredrick of the PA DCNR are aware of the intent to minimize impacts and utilize avoidance measures were practical. PA DCNR is also aware that moderate impacts to Shale Barren Pussytoes (*Antennaria virginica*) and Missouri Gooseberry (*Ribes missouriense*) are anticipated.

5) 2015 Plans for Survey

- a. A general summary and review of the locations at which 2015 botanical surveys will need to be conducted (See attached 2015 Survey Year Proposed Botanical Survey Table).
 - i. It was explained that surveys were expected in the areas of alignment modifications, access road additions, and additional workspaces that lay within the previously determined Areas of Concern (AOCs) assigned by PA DCNR in the original (and Updated) PNDI search receipt.
- b. Jason and Frederick agreed with the 2015 survey list proposed by Tetra Tech. Minor revisions that were discussed regarding which surveys were to be conducted in what areas and when are reflected in the attached 2015 Survey Year Proposed Botanical Survey Table.



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.

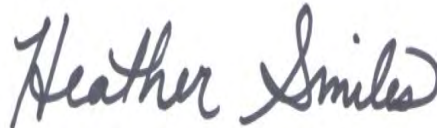
Bog Turtle (*Glyptemys muhlenbergii*, PA Endangered, Federal Threatened)

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:

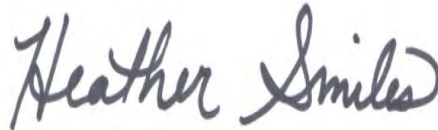
County	Potential Conflict	Western End of Habitat Assessment		Eastern End of Habitat Assessment		Comment
		Latitude	Longitude	Latitude	Longitude	
Indiana / Cambria	Timber Rattlesnake	40.43147	-78.96987	40.42383	-78.91892	Laurel Ridge
Blair	Timber Rattlesnake	40.44429	-78.58242	40.46527	-78.48908	South 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

**Sunoco Pipeline, L.P. Proposed Pennsylvania Pipeline Project
Timber Rattlesnake Preliminary Results Review
Meeting with PA Fish and Boat Commission**

**Wednesday, March 4, 2015
1:00 PM**

Location:

PA Fish & Boat Commission/or Offsite Location
Division of Environmental Services, Natural Gas Section
236 Lake Road
Somerset, PA 15501
814-279-3080

Anticipated Attendees:

PAFBC:

- Gary Smith – Fisheries Biologist, PA Fish & Boat Commission, Division of Environmental Services, Natural Gas Section (garys@pa.gov)

Sunoco Pipeline, LP:

- Chris Embry – Environmental Project Manager (CPEMBRY@sunocologistics.com)

Tetra Tech, Inc.

- Brad Schaeffer – Environmental Project Manager (Brad.Schaeffer@tetrattech.com)
 - Preston Smith – Wetland and T&E Field Survey Coordinator (Preston.Smith@tetrattech.com)
 - Stan Boder – Stream/Wetland permitting (John.Kwolek@tetrattech.com)
-

AGENDA

- 1) **Introductions**
- 2) **Consultation History**
- 3) **Google Earth File Review: Survey Areas, Potential Habitats, Confirmed Habitats**
- 4) **2015 Plans for Survey**
- 5) **Avoidance, Minimization, and Restoration**
- 6) **Other Topics.**

Google Earth Legend

	Survey Area
	Potential Gestation Habitat
	Confirmed Gestation Habitat
	Potential Denning Habitat
	Surveyed Denning Habitat
	Confirmed Denning Habitat

Smith, Preston

From: Smith, Gary (Fish & Boat) <garys@pa.gov>
Sent: Wednesday, March 11, 2015 4:00 PM
To: Schaeffer, Brad; Smith, Preston; stan@wildlife-specialists.com
Cc: Smiles, Heather A
Subject: PPP Timber Rattlesnake Review

During our Sunoco Pennsylvania Pipeline Project (PPP) Timber Rattlesnake meeting on March 4, 2015, a question came up regarding how far away from the project to do Timber Rattlesnake Phase 2 surveys at the potential gestation and denning habitats identified in Phase 1 surveys.

The following is our recommendations:

If the potential habitat that was identified during Phase 1 surveys is within the Limits of Disturbance, then conduct a Phase 2 survey.

If the potential habitat that was identified during Phase 1 surveys is outside the Limits of Disturbance, then:

Option 1 – Conduct a Phase 2 survey. If timber rattlesnakes are found (i.e., confirmed habitat), then we will recommend a PFBC approved timber rattlesnake biologist on-site for work conducted during the active timber rattlesnake season (April 15 – October 15) in that area. If no timber rattlesnakes are found, we will not recommend a PFBC approved timber rattlesnake biologist on-site for work conducted in that area.

Option 2 – Do not conduct a Phase 2 survey. We will assume presence of timber rattlesnakes in this area, then we will recommend a PFBC approved timber rattlesnake biologist on-site for work conducted during the active timber rattlesnake season (April 15 – October 15) in this area.

Please contact me if you have any questions.

Thanks,

Gary

Gary A. Smith | Fisheries Biologist
PA Fish & Boat Commission
Division of Environmental Services, Natural Gas Section
236 Lake Road
Somerset, PA 15501
814-279-3080



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

COMMONWEALTH OF PENNSYLVANIA
Pennsylvania Game Commission

2001 ELMERTON AVENUE
HARRISBURG, PA 17110-9797

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

ADMINISTRATIVE BUREAUS:

ADMINISTRATION.....717-787-5670
HUMAN RESOURCES.....717-787-7836
FISCAL MANAGEMENT.....717-787-7314
CONTRACTS AND
PROCUREMENT.....717-787-6594
LICENSING.....717-787-2084
OFFICE SERVICES.....717-787-2116
WILDLIFE MANAGEMENT.....717-787-5529
INFORMATION & EDUCATION.....717-787-6286
WILDLIFE PROTECTION.....717-783-6526
WILDLIFE HABITAT
MANAGEMENT.....717-787-6818
REAL ESTATE DIVISION.....717-787-6568
AUTOMATED TECHNOLOGY
SERVICES.....717-787-4076

www.pgc.state.pa.us

March 14, 2014

PGC ID Number: 201312180001

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

Re: Sunoco Pipeline, LP – Pennsylvania Pipeline Project
State Game Lands Nos. 46, 52, 71, 118, 147, 153, 198, 220, and 276
Large Project PNDI Review
Washington, Westmoreland, Indiana, Cambria, Blair, Huntingdon, Perry, Cumberland, Lebanon,
Lancaster, Berks, and Chester Counties, PA

Dear Mr. Smith,

Thank you for submitting your Pennsylvania Natural Diversity Inventory (PNDI) Large Project Environmental Review request. The Pennsylvania Game Commission (PGC) screened this project, including the requested 1500-foot buffer, for potential impacts to species and resources of concern under PGC responsibility, which includes birds and mammals only.

Potential Impact Anticipated

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

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

Next Steps

Indiana Bat

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

Allegheny Woodrat

The PGC has identified portions of the proposed project where potential Allegheny woodrat habitat may exist, and could be impacted by the proposed project. The PGC is requesting that Allegheny woodrat surveys be completed within the Allegheny Woodrat Survey Areas (see Maps 1-7 attached). The surveys should be completed by a qualified biologist and follow protocols found in the attached *PGC Allegheny Woodrat* guidance document. Please be sure that the following information, at a minimum, is provided for further review and comment by the PGC:

- a 1:24,000 scale copy of a USGS topo map and a GIS shapefile illustrating the locations (i.e. points) of all woodrat activity centers and potential activity centers, as well as the limits (i.e. polygons) of all woodrat habitat sites (central point locations with average width and length measurements will not be accepted to illustrate the habitat sites)
- color photographs, keyed to a location and orientation map, of any woodrat habitat sites, activity centers, potential activity centers, or woodrat sign that are identified during the surveys
- a Woodrat Habitat Site Survey form for each habitat site identified during the survey

The survey report should be submitted to the PGC no later than December 31st of the year it is completed.

Eastern Small-footed Bat

The PGC has identified portions of the project where potential eastern small-footed bat day roost habitat may exist, and could be impacted by the proposed project. The PGC is requesting that all potential eastern small-footed bat day roost habitat be assessed and delineated by a qualified biologist within the Small-footed Bat Survey Areas (see Maps 1-7 attached). Please be sure that the following information, at a minimum, is provided for further review and comment by the PGC:

- a 1:24,000 scale copy of a USGS topo map and a GIS shapefile illustrating the limits of all potential small-footed bat day roost habitat that is identified
- a GIS shapefile illustrating the proposed limits of tree clearing throughout the Small-footed Bat Survey Area
- a GIS shapefile illustrating the proposed limits of earthwork, including any proposed grubbing or erosion and sedimentation pollution controls, throughout the Small-footed Bat Survey Area
- representative color photographs of all surface rock encountered during the assessment and delineation regardless of whether the rock is considered to be potential eastern small-footed bat day roost habitat or not (numerous photos for each area of surface rock are strongly recommended)

- a narrative or table detailing the following information for each area of surface rock that is encountered during the assessment and delineation to support or refute the rock's potential as eastern small-footed bat day roost habitat:
 - the estimated canopy cover over the rock
 - anticipated solar exposure of the rock
 - amount and size of crevices available for roost sites
 - presence of organic material, soil, or water within those crevices
 - other details as necessary that cannot be adequately conveyed via the photos provided
- a narrative detailing the reason(s) for any surface rock encountered not being considered potential small-footed myotis day roost habitat;
- and a photo location and orientation map for all photos provided.

The survey report should be submitted to the PGC no later than December 31st of the year it is completed.

Northern Harrier

The PGC is requesting that all site preparation, construction, reclamation, and future maintenance mowing within the Northern Harrier Restriction Area (see Map 8 attached) avoid the period between April 15 and August 31 to minimize potential impacts to northern harriers and their habitat during the breeding and nesting season.

The PGC is also recommending that Sunoco use the following seed mix within this section of the project area to ensure the establishment of beneficial herbaceous habitat for grassland species post-construction.

Species	Common Name	Seed/Acre	Percent Live Seed
<i>Avena sativa – spring planting</i>	annual oats	30lb	
<i>Lolium multiflorum- fall planting</i>	annual ryegrass	10lb	
<i>Schizachyrium scoparium</i>	little bluestem	4 lbs	10-67
<i>Sorghastrum nutans</i>	indian-grass	2 lbs	10-50
<i>Bouteloua curtipendula</i>	side-oats grama	1 lb	5-25
<i>Panicum virgatum</i>	switchgrass	1 lb	10-12
<i>Rudbeckia triloba plus another*</i>	black-eyed susan	¼ lb	1-5, each
<i>Coreopsis tripteris</i>	tall tickseed	1 oz	1-5
<i>Chasmanthium latifolium</i>	sea-oats	1lb	1-30
Straw Mulch – NO HAY			

Furthermore, when plans are developed illustrating the specific location and extent of any proposed permanent facilities (e.g. access roads, extra work spaces, launcher/receiver sites, meter sites, compressor stations, etc.) within this section of the project area, please provide a copy of those plans to this office for further review and written comment so that any permanent impacts to northern harriers can be considered. Every effort should be made to avoid and minimize permanent impacts to northern harrier habitat as these plans are developed, and depending on the nature and extent of any such impacts, habitat assessments, species surveys and/or mitigation may be necessary.

Northern Long-eared Bats and Silver-haired Bats

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

Bald Eagle

In January 2014, the PGC Board of Commissioners approved the removal of bald eagles from the state-listed endangered and threatened list. This status change will be reflected in an upcoming edition of the Pennsylvania Bulletin. Bald eagles are now classified as a Pennsylvania “protected” species. As the name implies, bald eagle will continue to enjoy protections provided by the Federal Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and the Lacey Act. As a result, the PGC defers comments on potential impacts to bald eagles to the U.S. Fish and Wildlife Service.

The Bald and Golden Eagle Protection Act protects eagles from various forms of take, including disturbance. Please refer to the U.S. Fish and Wildlife Service's National Bald Eagle Management Guidelines (<http://www.fws.gov/migratorybirds/baldeagle.htm>) for specific measures that should be taken to ensure bald eagles are not disturbed. If you have questions about when and how to obtain a federal permit because you believe your proposed project will disturb bald eagles, and you are not able to implement measures to avoid disturbance, please contact the Fish and Wildlife Service's Pennsylvania Field Office at 814-234-4090.

For additional information on bald eagles and bald eagle nest etiquette refer to the “Bald Eagle Watching in Pennsylvania” link on the PGC’s website (www.pgc.state.pa.us), under the Wildlife tab and then by clicking on Birding and Bird Conservation.

Wetlands

National Wetland Inventory Mapping (NWI) and/or aerial photos suggest that wetlands are located within the requested review area along the Little Conemaugh River, the Raystown Branch Juniata River, Marsh Creek, and Middle Creek. The PGC is requesting that the final project avoid, or at least minimize to the greatest practical extent, any adverse impacts to these resources and their associated wildlife habitat.

Potential Bat Hibernacula

In addition, the PA Department of Environmental Protection’s *Abandoned Mine Land (AML) Inventory Points* from www.pasda.psu.edu indicates abandoned mine features within the requested review area. These mine features have the potential to connect to abandoned deep mine workings that can serve as hibernacula for a variety of cave bat species. These AML openings and any undocumented openings and caves located along the proposed alignment and within the review buffer must be assessed following the attached *PGC Protocol for Assessing Bat Use of Potential Hibernacula*. Any features having potential as bat hibernacula will need to be surveyed to determine the presence or absence of bat species. A special use permit will need to be obtained by the consultant in order to conduct such surveys that involve the handling of bats.

State Game Lands

Portions of the proposed project are located on State Game Lands Nos. 46, 52, 71, 118, 147, 198, and 276 and adjacent to State Game Lands Nos. 153 and 220. Please contact Mr. Travis Anderson, Southwest Region Land Management Supervisor, at 724-238-9523 to discuss and coordinate the project on SGL 153 and 276, Mr. Robert Einodshofer, Southcentral Region Land Management Supervisor, at 814-643-1831 to discuss and coordinate the project on SGL 71, 118, 147, and 198, and Mr. Bruce Metz, Southeast Region Land Management Supervisor, at 610-926-3136 to discuss and coordinate the project on SGL 46, 52, and 220.

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

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

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

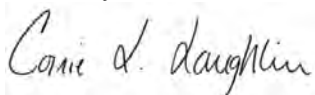
If the proposed work has not changed and no additional information concerning listed species is found, the project will be cleared for PNDI requirements by the PGC for an additional 2 years.

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

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

If you have any questions regarding this letter, or any future review requests for this or any other projects, please contact John Taucher at 717-787-4250, extension 3632 or via e-mail at jotaucher@pa.gov.

Sincerely,



Corrie Laughlin
Division of Environmental Planning & Habitat Protection
Bureau of Wildlife Habitat Management
Phone: 717-787-4250, Extension 3634
Fax: 717-787-6957
e-Mail: claughlin@pa.gov

A PNHP Partner



CLL/jwt

Enclosures:

- Project Overview Map
- Maps 1-8
- PGC Allegheny Woodrat guidance document
- PGC Protocol for Assessing Bat Use of Potential Hibernacula

cc: W. Anderson

Myers

Grohol

Trusso

Vreeland

Morgan

T. Anderson

Einodshofer

Metz

DuBrock

Brauning

Butchkoski

Turner

Gross

Barber

DiMatteo

Havens

Taucher

Librandi Mumma

Ms. Jennifer Siani, U.S. Fish and Wildlife Service

Ms. Pamela Shellenberger, U.S. Fish and Wildlife Service

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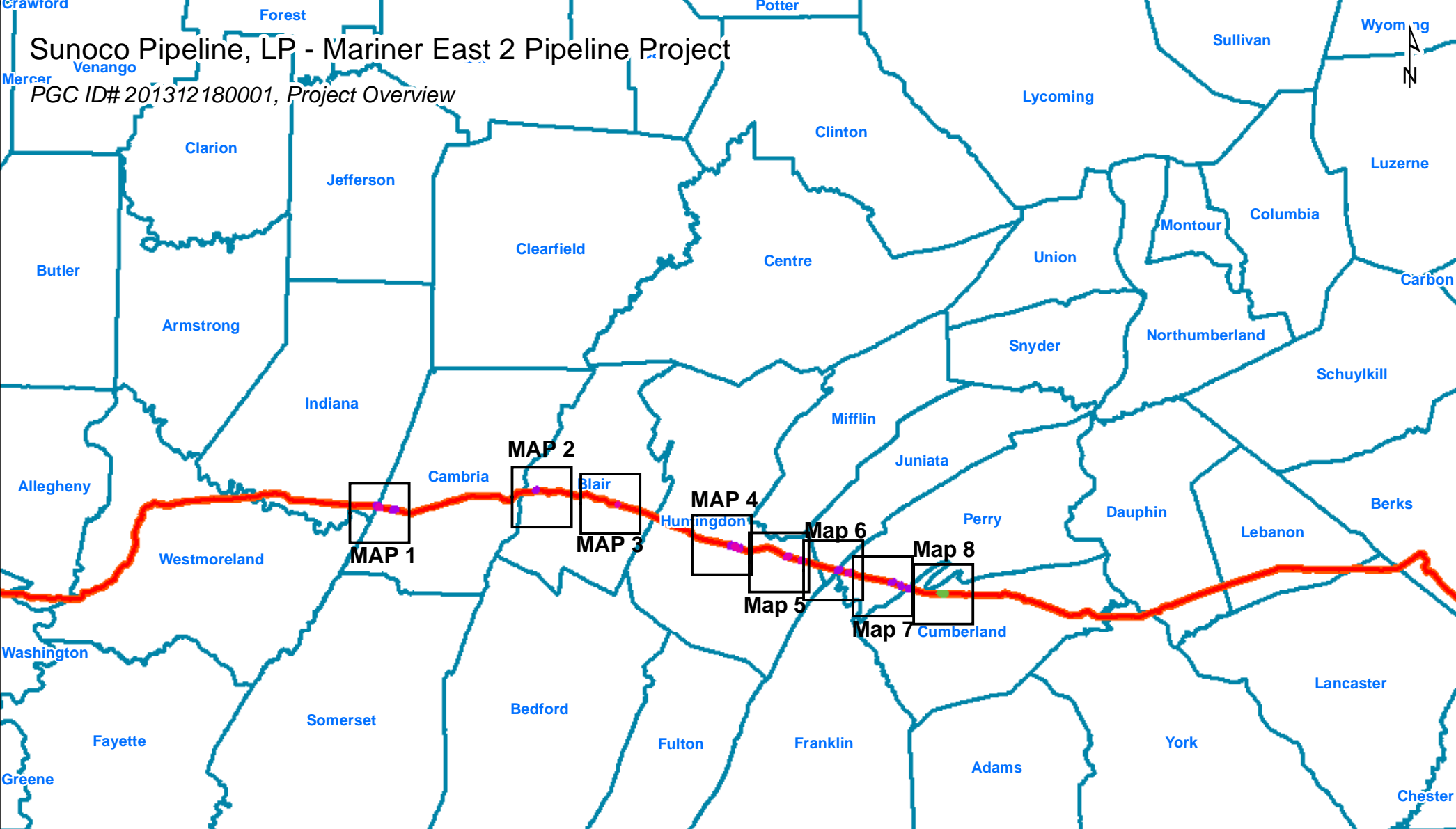
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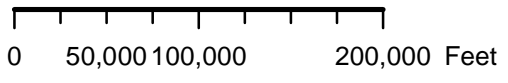
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Sunoco Pipeline, LP - Mariner East 2 Pipeline Project

PGC ID# 201312180001, Project Overview

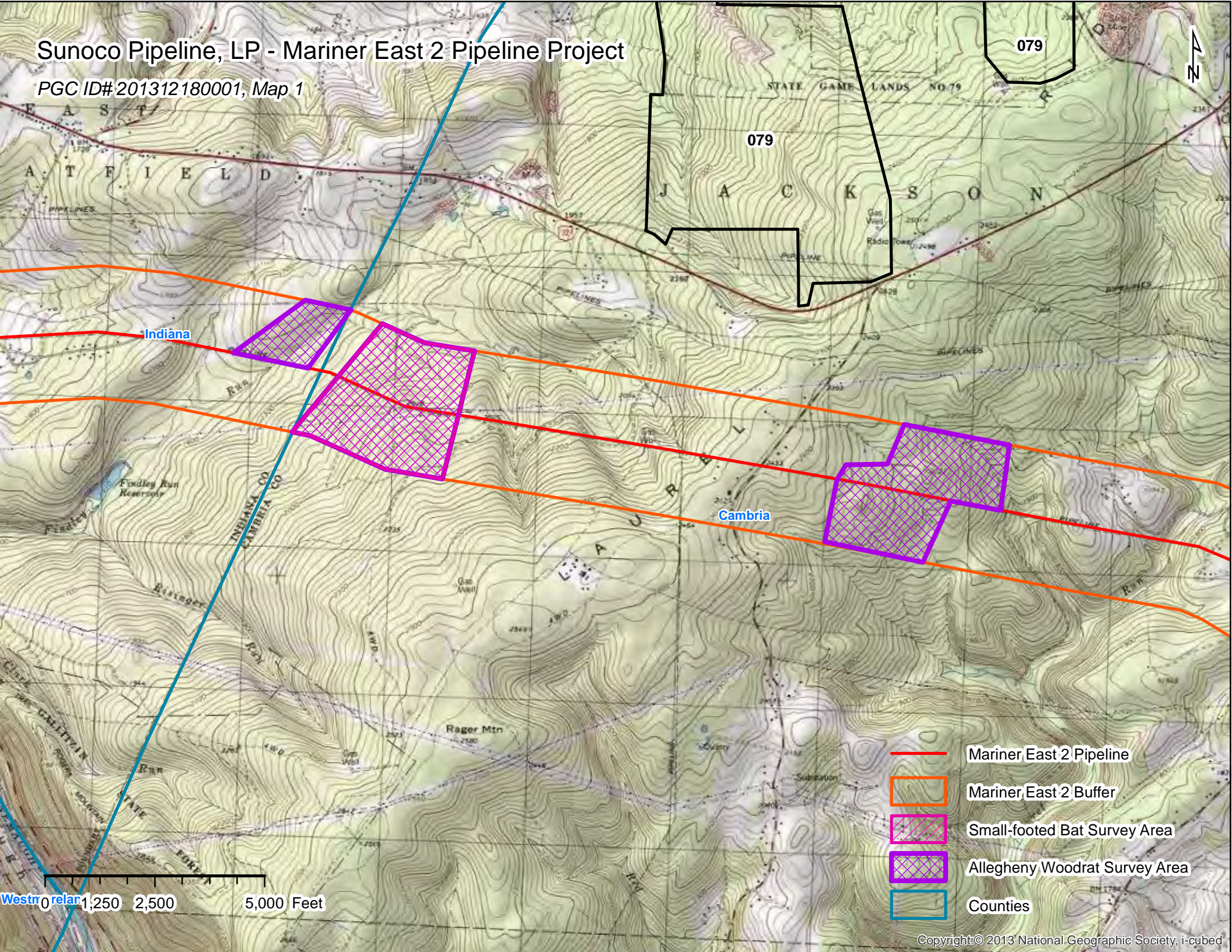


-  Mariner East 2 Pipeline
-  Mariner East 2 Buffer
-  Small-footed Bat Survey Area
-  Allegheny Woodrat Survey Area
-  Northern Harrier Restriction Area
-  Counties








Sunoco Pipeline, LP - Mariner East 2 Pipeline Project

PGC ID# 201312180001, Map 1



Indiana

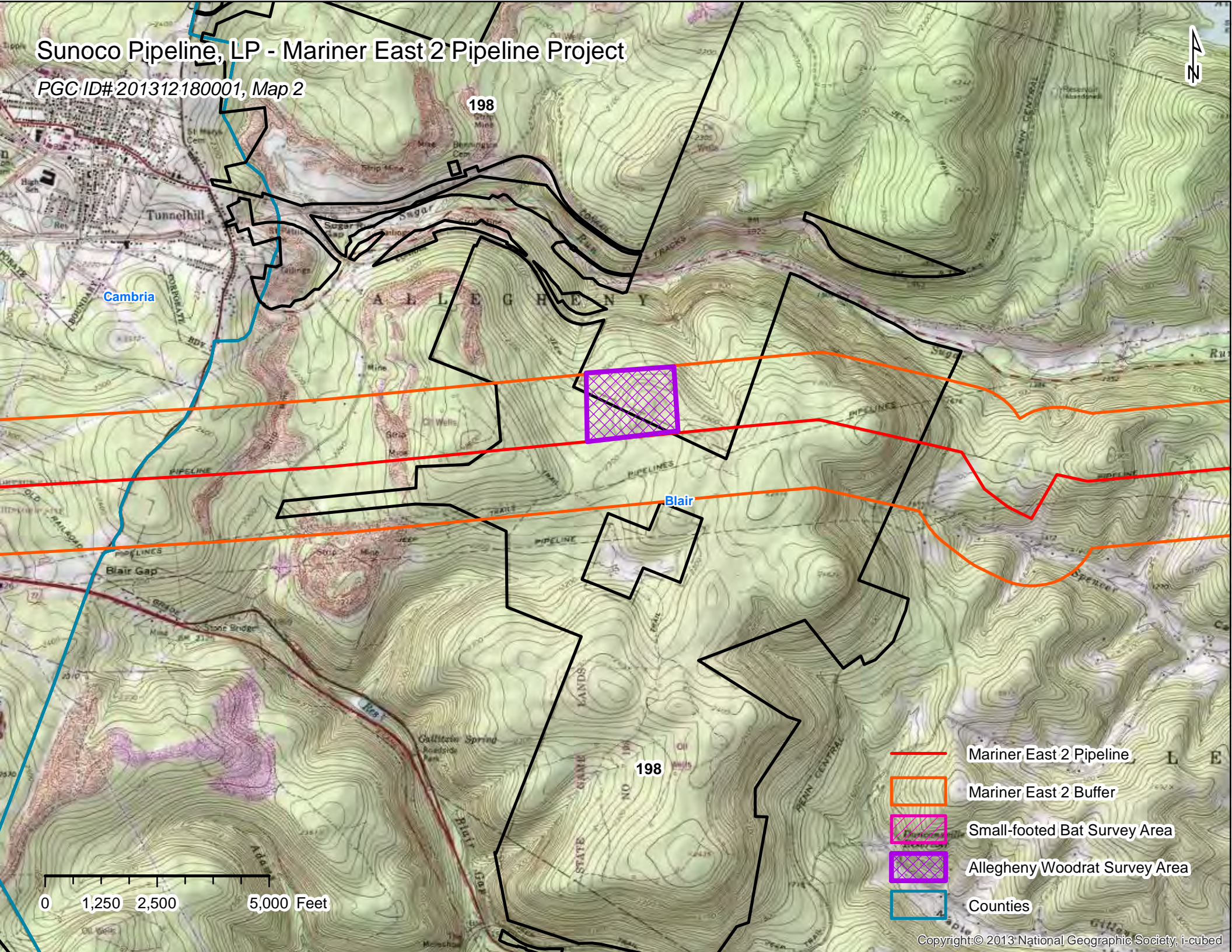
Cambria


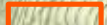

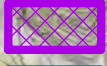

-  Mariner East 2 Pipeline
-  Mariner East 2 Buffer
-  Small-footed Bat Survey Area
-  Allegheny Woodrat Survey Area
-  Counties

Westmar 0 1,250 2,500 5,000 Feet

Sunoco Pipeline, LP - Mariner East 2 Pipeline Project

PGC ID# 201312180001, Map 2

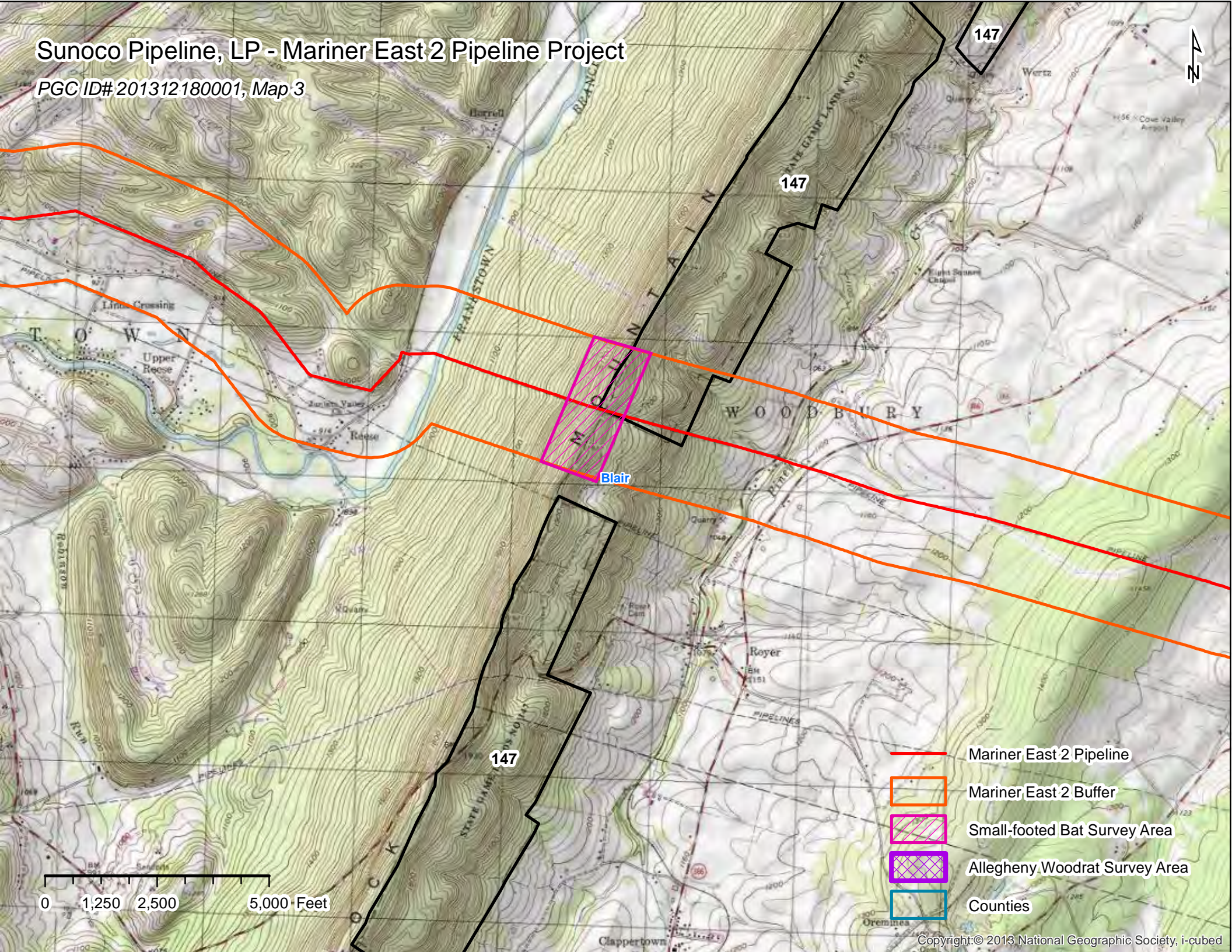







-  Mariner East 2 Pipeline
-  Mariner East 2 Buffer
-  Small-footed Bat Survey Area
-  Allegheny Woodrat Survey Area
-  Counties

0 1,250 2,500 5,000 Feet

Sunoco Pipeline, LP - Mariner East 2 Pipeline Project

PGC ID# 201312180001, Map 3

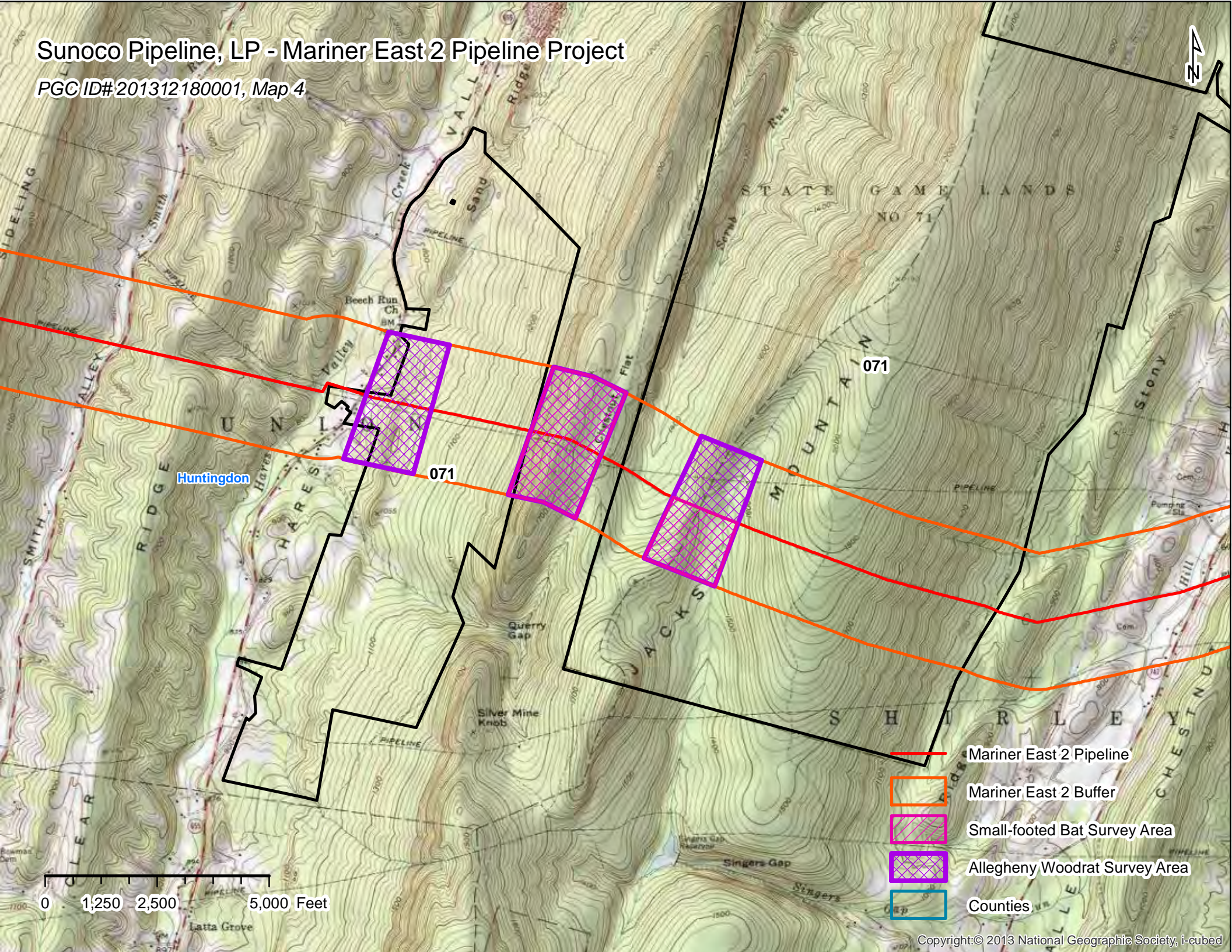


-  Mariner East 2 Pipeline
-  Mariner East 2 Buffer
-  Small-footed Bat Survey Area
-  Allegheny Woodrat Survey Area
-  Counties

0 1,250 2,500 5,000 Feet

Sunoco Pipeline, LP - Mariner East 2 Pipeline Project

PGC ID# 201312180001, Map 4



Huntingdon

071

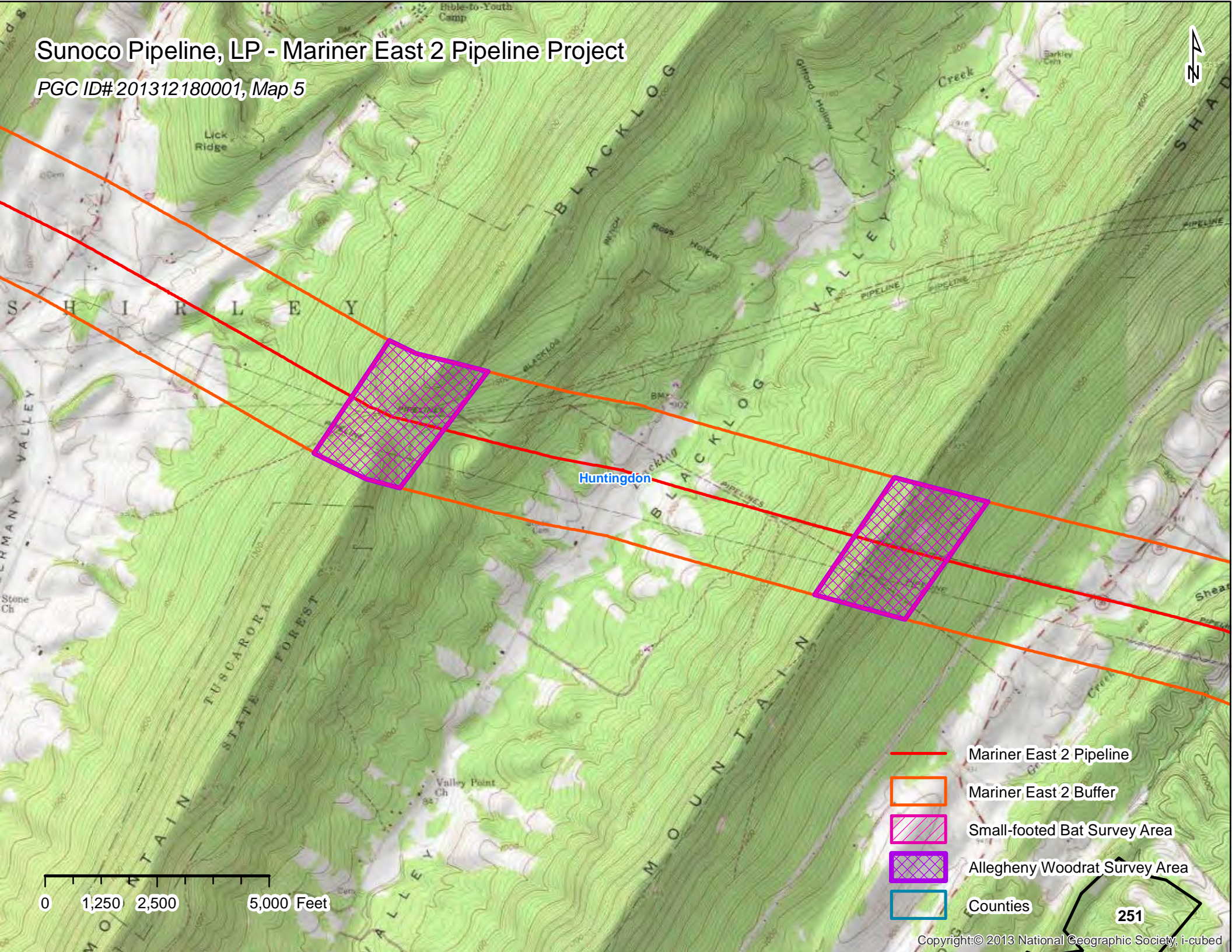
071

- Mariner East 2 Pipeline
- Mariner East 2 Buffer
- Small-footed Bat Survey Area
- Allegheny Woodrat Survey Area
- Counties

0 1,250 2,500 5,000 Feet

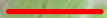




Sunoco Pipeline, LP - Mariner East 2 Pipeline Project

PGC ID# 201312180001, Map 5



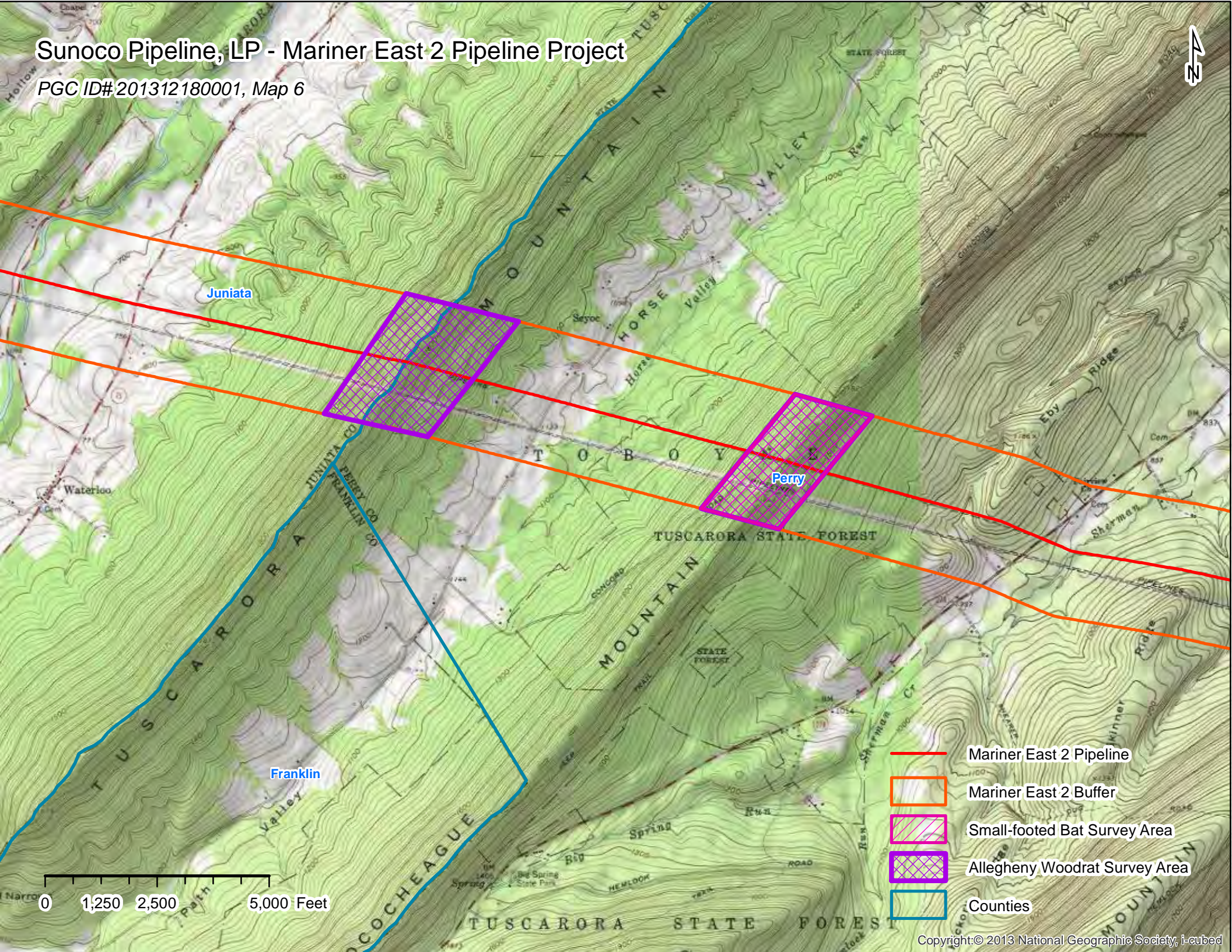
Huntingdon

0 1,250 2,500 5,000 Feet

-  Mariner East 2 Pipeline
-  Mariner East 2 Buffer
-  Small-footed Bat Survey Area
-  Allegheny Woodrat Survey Area
-  Counties

Sunoco Pipeline, LP - Mariner East 2 Pipeline Project






PGC ID# 201312180001, Map 6



Juniata

Perry

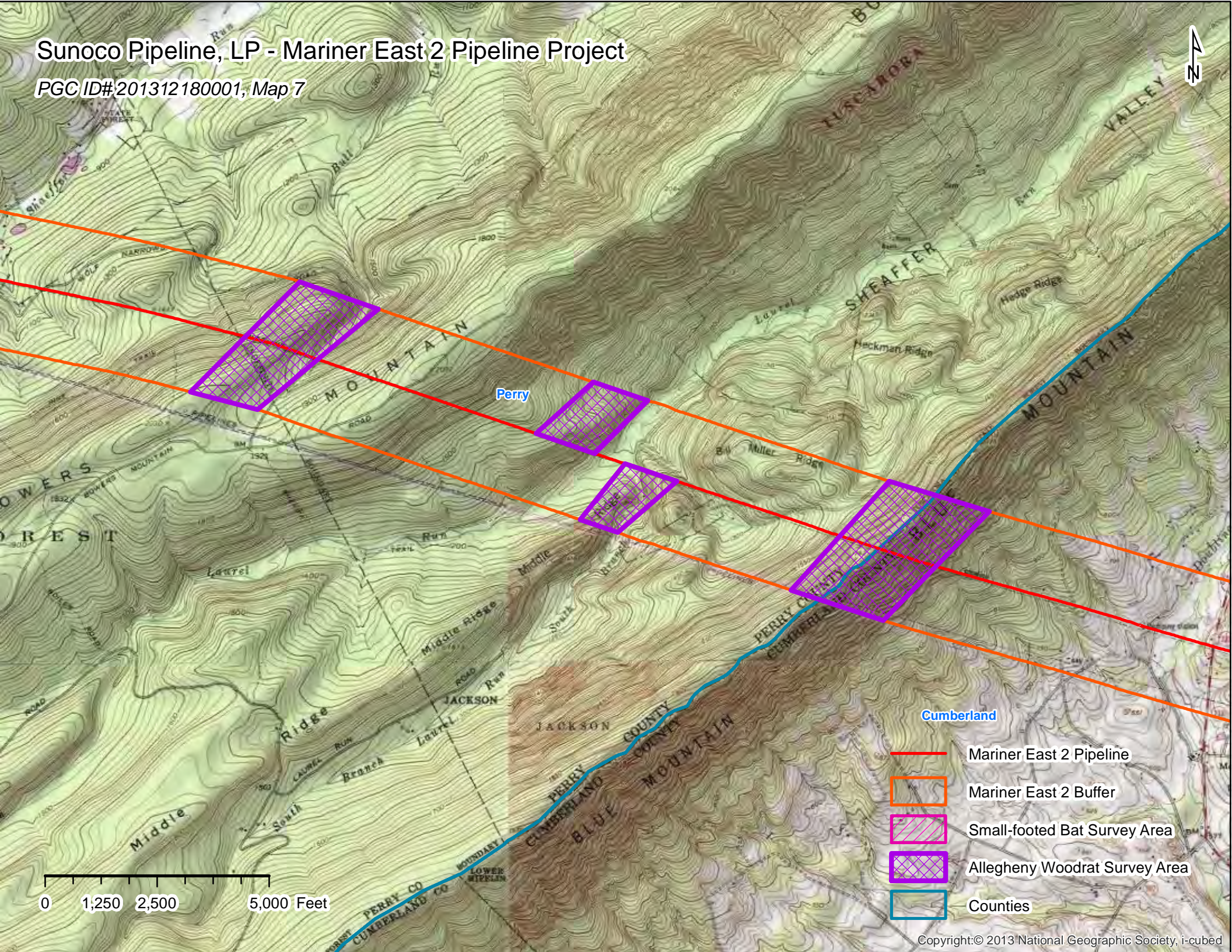
Franklin

-  Mariner East 2 Pipeline
-  Mariner East 2 Buffer
-  Small-footed Bat Survey Area
-  Allegheny Woodrat Survey Area
-  Counties






0 1,250 2,500 5,000 Feet

Sunoco Pipeline, LP - Mariner East 2 Pipeline Project

PGC ID#201312180001, Map 7

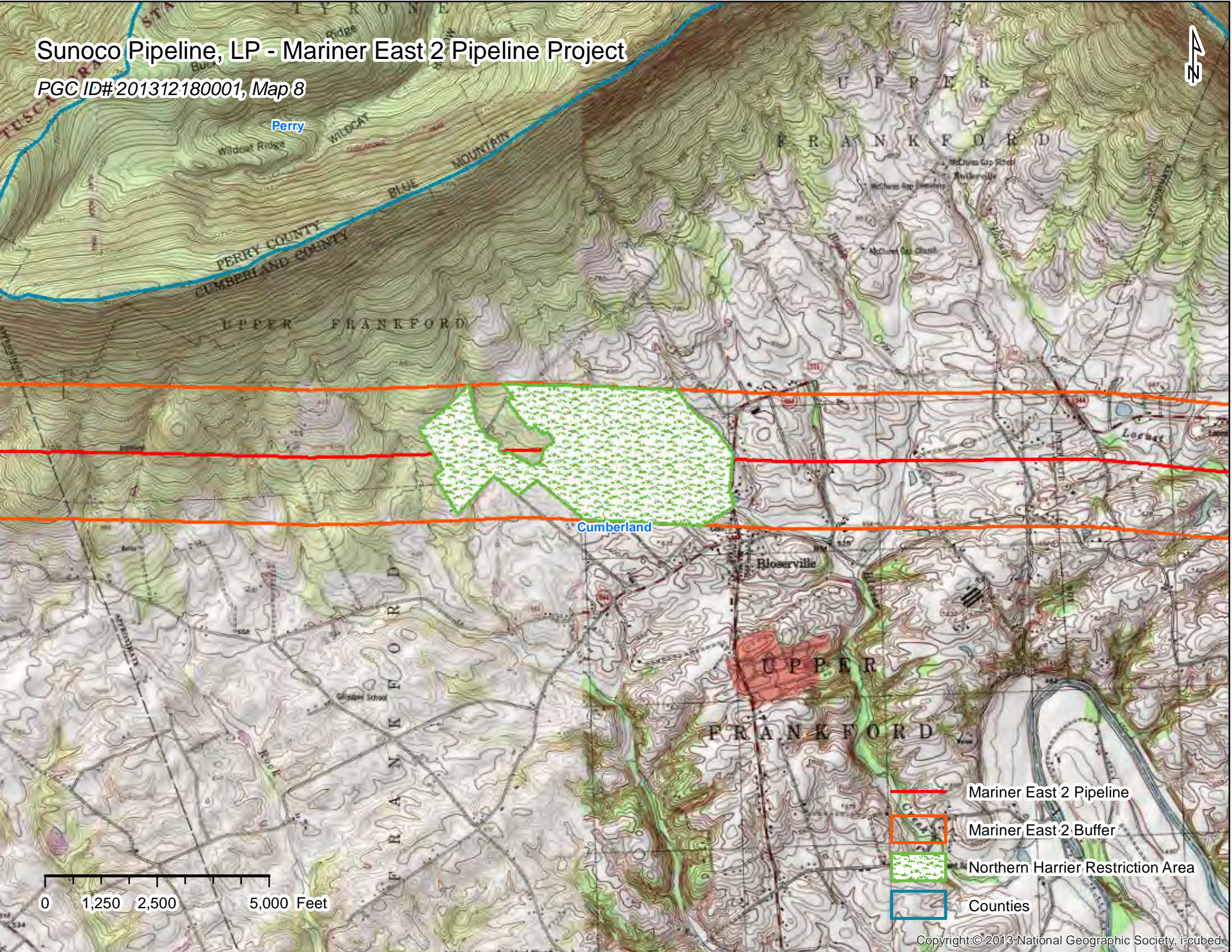


0 1,250 2,500 5,000 Feet

-  Mariner East 2 Pipeline
-  Mariner East 2 Buffer
-  Small-footed Bat Survey Area
-  Allegheny Woodrat Survey Area
-  Counties

Sunoco Pipeline, LP - Mariner East 2 Pipeline Project

PGC ID#201312180001, Map 8



Perry





PERRY COUNTY
CUMBERLAND COUNTY

UPPER FRANKFORD

UPPER
FRANKFORD

Cumberland

UPPER
FRANKFORD

-  Mariner East 2 Pipeline
-  Mariner East 2 Buffer
-  Northern Harrier Restriction Area
-  Counties

0 1,250 2,500 5,000 Feet

**Sunoco Pipeline, L.P. Proposed Pennsylvania Pipeline Project
Preliminary Results Review with Pennsylvania Game Commission
Meeting Minutes
Thursday, April 23, 2015
1:00 PM**

Location:

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

Attendees:

PGC:

John Taucher – Project Reviewer, PGC, Bureau of Wildlife Habitat Management, Division of Environmental Planning & Habitat Protection

Tetra Tech, Inc.

Preston Smith – Natural Resources Lead (Preston.Smith@tetrattech.com)
Wildlife Specialists – Biologist (stan@wildlife-specialists.com)

MEETING MINUTES

- Started with Introductions and Projects roles
 - John took over on the Project for Corrie Laughlin
 - Preston is the Natural Resources Lead
 - Stan is a biologist involved with the Allegheny woodrat and small-footed bat surveys
- Briefly discussed consultation history and Project overview
 - PGC will defer to USFWS regarding the Northern long-eared bat starting May 4th, 2015
 - Northern harrier plantings are recommended
 - Bald eagle is not as great of concern since delisting
- Google Earth File was reviewed to show the survey areas, potential habitat for the small-footed bat and potential activity centers and activity centers for the Allegheny woodrat were identified and discussed
- For the confirmed small-footed bat habitat, PGC would likely require mitigation on site or nearby at a ratio of 2:1 or possibly 3:1. There also could be seasonal restrictions on disturbance with construction permitted between November 15 and April 1. Optionally emergence counts could be completed in the area to determine if the small-footed bat is using the area
- For the Allegheny woodrat, the potential activity centers likely will not require mitigation though restoration of the site would be recommended. For the activity centers, mitigation ratios similar to the small-footed bat (2:1 or 3:1) likely would be required. Off site mitigation including plantings are a possible mitigation option. John will review the historical records to determine when the most recent know occurrence was in those areas.

- Preston is to send the preliminary Allegheny woodrat and small-footed bat survey report as well as shapefiles that show these areas.
- Stan commented that at this point there were no additional Allegheny woodrat activity centers or potential activity centers identified this year and that the results in the draft report would be a complete data set for the Allegheny woodrat.
- Stan pointed out that there was only one more small area to look at for the small-footed bat.
- John requested copies of the 2014 Bat survey results be sent to him along with anything else that may have been sent to the PGC regarding the Project. Files often don't get transferred.
- John prefers to have electronic copies of reports and correspondence rather than hard copies.



United States Department of the Interior



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

March 19, 2014

Preston Smith
661 Anderson Drive
Foster Plaza
Pittsburgh, PA 15220

RE: USFWS Project #2014-0200

Dear Mr. Smith:

This responds to your project information received by our office on December 13, 2013. You requested information about federally listed and proposed endangered and threatened species within the area affected by the proposed Sunoco Mariner East 2 Pipeline project located in Washington, Allegheny, Westmoreland, Indiana, Cambria, Blair, Huntington, Juniata, Perry, Cumberland, York, Dauphin, Lebanon, Lancaster, Berks, Chester, and Delaware counties, Pennsylvania. The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species and the Migratory Bird Treaty Act (MBTA, 16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755, as amended) to ensure the protection of migratory bird species.

Indiana bat

The project is within the range of the Indiana bat (*Myotis sodalis*), a species that is federally listed as endangered. Indiana bats hibernate in caves and abandoned mines during the winter months (November through March), and use a variety of upland, wetland and riparian habitats during the spring, summer and fall. Indiana bats usually roost in dead or living trees with exfoliating bark, crevices or cavities. Female Indiana bats form nursery colonies under the exfoliating bark of dead or living trees, such as shagbark hickory, black birch, red oak, white oak, and sugar maple, in upland or riparian areas.

Land-clearing, especially of forested areas, may adversely affect Indiana bats by killing, injuring or harassing roosting bats, and by removing or reducing the quality of foraging and roosting habitat. Therefore, to determine whether the proposed project will affect Indiana bats, we will need additional project information about how much forest disturbance will occur (area, tree species, and size classes).

Northern Long-Eared bat

The northern long-eared bat (*Myotis septentrionalis*) was proposed for listing as an endangered species on October 2, 2013. No critical habitat has been proposed at this time. Species proposed for listing are not afforded protection under the ESA; however, as soon as a listing becomes effective, the prohibition against jeopardizing its continued existence and “take”¹ applies **regardless of an action’s stage of completion**. Therefore, to avoid significant project delays we recommend that the effect of the project on northern long eared bats, and their habitat, be considered during the project planning and design. Additional information about northern long-eared bats, including ecology, habitat descriptions, listing status updates, and possible conservation measures may be found at www.fws.gov/midwest/endangered/mammals/nlba/index.html (click on Northern Long-eared Bat Interim Conference and Planning Guidance). We are available to discuss potential conservation measures specific to your project design.

Bog turtle

The project is within the known range of the bog turtle (*Clemmys muhlenbergii*), a species that is federally listed as threatened. Bog turtles inhabit shallow, spring-fed fens, sphagnum bogs, swamps, marshy meadows, and pastures characterized by soft, muddy bottoms; clear, cool, slow-flowing water, often forming a network of rivulets; high humidity; and an open canopy. Bog turtles usually occur in small, discrete populations occupying suitable wetland habitat dispersed along a watershed. The occupied “intermediate successional stage” wetland habitat is usually a mosaic of micro-habitats ranging from dry pockets, to areas that are saturated with water, to areas that are periodically flooded. Some wetlands occupied by bog turtles are located in agricultural areas and are subject to grazing by livestock.

To determine the potential effects of the proposed project on bog turtles and their habitat, begin by identifying all wetlands in, and within 300 feet of, the project area. The project area includes all areas that will be permanently or temporarily affected by any and all project features, including building, roads, staging areas, utility lines, outfall and intake structures, wells, stormwater retention or detention basins, parking lots, driveways, lawns, etc. The area of investigation should be expanded when project effects might extend more than 300 feet from the project footprint. For example, the hydrological effects of some projects (*e.g.*, large residential or commercial developments; golf courses; community water supply wells) might extend well beyond the project footprint due to the effects that impervious surfaces or groundwater pumping may have on the hydrology of nearby groundwater-dependent wetlands. Wetlands should be included on a map showing existing as well as proposed project features.

¹ As defined in the Act, take means “. . . to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” “Harm” in the definition of take means an act which kills or injures wildlife. Such act may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering (50 CFR part 17.3). “Harass” means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.

If someone qualified to identify and delineate wetlands has, through a field investigation, determined that no wetlands are located in or within 300 feet of the project area (or within the expanded investigation area, as described above), it is not likely that your project will adversely affect the bog turtle. If this is the case, no further consultation with the Fish and Wildlife Service is necessary, although we would appreciate receiving a courtesy copy of the wetland investigator's findings for our files.

If wetlands have been identified in or within 300 feet of the project area (or in an expanded investigation area, as described above), assess their potential suitability as bog turtle habitat, as described under “*Bog Turtle Habitat Survey*” (Phase 1 survey) of the *Guidelines for Bog Turtle Surveys* (revised April 2006). Survey results should be submitted to the Service for review and concurrence. The survey guidelines, as well as a Phase 1 field form and report template, are available from the Service upon request.

Due to the skill required to correctly identify potential bog turtle habitat, we recommend that the Phase 1 survey be done by a qualified surveyor (see enclosed list). If the Phase 1 survey is done by someone who is not on this list, it is likely that a site visit by a Fish and Wildlife Service biologist will be necessary to verify their findings. *Due to the limited availability of staff from this office, such a visit may not be possible for some time. Use of a qualified surveyor will expedite our review of the survey results.*

If potential bog turtle habitat is found in or near the project area, efforts should be made to avoid any direct or indirect impacts to those wetlands (see enclosed *Bog Turtle Conservation Zones*). Avoidance of direct and indirect effects means no disturbance to or encroachment into the wetlands (e.g., filling, ditching or draining) for any project-associated features or activities. Adverse effects may also be anticipated to occur when lot lines include portions of the wetland; when an adequate upland buffer is not retained around the wetland (see *Bog Turtle Conservation Zones*); or when roads, stormwater/sedimentation basins, impervious surfaces, or wells affect the hydrology of the wetland.

If potential habitat is found, submit (along with your Phase 1 survey results) a detailed project description and detailed project plans documenting how direct and indirect impacts to the wetlands will be avoided. If adverse effects to these wetlands cannot be avoided, a more detailed and thorough survey should be done, as described under “*Bog Turtle Survey*” (Phase 2 survey) of the *Guidelines*. The Phase 2 survey should be conducted by a qualified biologist with bog turtle field survey experience (see enclosed list of qualified surveyors). Submit survey results to the Service for review and concurrence.

In cases where adverse effects to federally listed species cannot be avoided, further consultation with the Service would be necessary to avoid potential violations of section 9 (prohibiting “take” of listed species) and/or section 7 (requiring federal agencies to consult) of the Endangered Species Act. Information about the section 7 and section 10 consultation processes (for federal and non-federal actions, respectively) can be obtained by contacting this office or accessing the Service’s Endangered Species Home Page (<http://endangered.fws.gov>).

Assessment of Risks to Migratory Birds

The Service is the principal Federal agency charged with protecting and enhancing populations and habitat of migratory bird species. The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the MBTA has no provision for authorizing incidental take, the Service recognizes that some birds may be killed even if all reasonable measures to avoid take are implemented.

The potential exists for avian mortality from habitat destruction and alteration within the project boundaries. Site-specific factors that should be considered in project siting to avoid and minimize the risk to birds include avian abundance; the quality, quantity and type of habitat; geographic location; type and extent of bird use (e.g. breeding, foraging, migrating, etc.); and landscape features. Please review the enclosed information for general recommendations for avoiding and minimizing impacts to migratory birds within and around the project area. Please be aware that since these are general guidelines, some of them may not be applicable to the current project design or they may have already been included in the project design.

This response relates only to endangered and threatened species under our jurisdiction, based on an office review of the proposed project's location. No field inspection of the project area has been conducted by this office. Consequently, this letter is not to be construed as addressing potential Service concerns under the Fish and Wildlife Coordination Act or other authorities. A compilation of certain federal status species in Pennsylvania is enclosed for your information.

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

If you have questions about Indiana bat please contact Pamela Shellenberger at (814) 234-4090 x 241. For questions about the bog turtle please contact Kayla Easler at (814) 234-4090 x 234. For questions regarding the Migratory bird information please contact Jennifer Siani at (814) 234-4090 x 225.

Sincerely,



Lora L. Zimmerman
Field Office Supervisor

Enclosures

Smith, Preston

From: Shellenberger, Pamela <pamela_shellenberger@fws.gov>
Sent: Wednesday, April 09, 2014 3:59 PM
To: Smith, Preston; Kayla Easler
Subject: PA Pipeline

Correction, I'll follow-up with a letter that outlines more specific information for bats species once I receive additional information about acres of forest impacts in these radii I provided to you.

Thanks!

Pamela Shellenberger
U.S. Fish and Wildlife Service
315 South Allen Street
State College, PA 16801
814-234-4090 x241
814-234-0748 (f)

<http://fws.gov/northeast/pafo/index.html>

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Smith, Preston

From: Easler, Kayla <kayla_easler@fws.gov>
Sent: Tuesday, April 22, 2014 4:22 PM
To: Smith, Preston; jdrasher@aqua-terraenv.com; Pamela Shellenberger; Robert M Anderson
Subject: Pennsylvania Pipeline 4-22-14 Conversation

Preston and Jay,

To follow up on our telephone conversation today I spoke with Pam and Robert Anderson here in the office. I had relayed your questions and concerns about the scenario of Sunoco not being able to move/avoid impacts to known occurrences, using directional drilling, Phase 2 surveys vs. trapping, and surveys for Dauphin County.

First, I have looked over Dauphin County, there are two watersheds for bog turtles that cross over into Dauphin County. However, the pipeline only crosses the Spring Creek Watershed . Phase 1 surveys only need to occur within this watershed in Dauphin County.

During our conference call on April 16, 2014, I had asked who the US Army Corps of Engineers (Corps) representative was and if the Corps has been involved. You mentioned that a pre-application meeting was planned for April 24, 2014, but has been canceled. I would like to stress that getting the Corps involved as soon as possible is important for the next steps of the project. If Sunoco will be going through known bog turtle occurrences and no avoidance or alternatives can be implemented ,or some form of take will occur then the Corps may initiate formal consultation . It is important for the Service to know who at the Corps we are working with as we move forward in our consultation process.

To address your question on Phase 2 and Phase 3 surveys, Phase 3 surveys cannot be conducted in lieu of a Phase 2 survey. Phase 2's should be conducted on wetlands that were determined to contain suitable habitat though Phase 1 surveys and Phase 3 trapping may be used to increase the possibility on finding bog turtles within the designated survey areas following the methods described under the *Bog Turtle Trapping Survey Protocol* (Phase 3 survey).

For areas that Phase 2/Phase 3 surveys are conducted and new bog turtle occurrences are found, we recommend that additional intensive surveys be conducted such as mark-recapture and telemetry. This will help us better understand how the bog turtles use the wetland, including where they nest, forage, and hibernate. This will also be helpful for the biological assessment that would need to be written (by Sunoco/consultants) and submitted to the Service to write the Biological Opinion if formal consultation occurs.

The occupied known occurrence areas that we have provided so far do not necessarily have to be surveyed. However, if surveys are done then the turtles found could also be part of a telemetry study to help better understand the movement of the population within the wetlands, as indicated in the above paragraph. Conducting additional surveys at known sites is up to Sunoco.

Finally, we have previously discussed the geology of the areas that Sunoco proposes to directionally drill. Please evaluate the suitability of the underlying geology of these areas for drilling. Provide additional information on what fluids(water, bentonite, etc.) will be used in what areas and acknowledgement from the engineers that drilling within each area will not result in an inadvertent return of these fluids. A frac-out contingency plan should also be available.

If you have questions feel free to call.

Also please let us know where you would like to start the site visits on April 29th at which time we can discuss a meeting time.

Thank you,

Kayla Easler
U.S. Fish and Wildlife Service
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801
Telephone: (814) 234-4090 **Ext. 231**
Fax: (814) 234-0748
<http://www.fws.gov/northeast/pafo/>

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Smith, Preston

From: Shellenberger, Pamela <pamela_shellenberger@fws.gov>
Sent: Tuesday, April 22, 2014 9:25 AM
To: Shane Roberts; Smith, Preston
Subject: Re: Reroutes

I looked at the reroute south of Altoona, and the entire reroute still lies within the swarming radius of the Hartman Mine hibernacula.

Let me know if you have any questions.

Thanks,

Pamela Shellenberger
U.S. Fish and Wildlife Service
315 South Allen Street
State College, PA 16801
814-234-4090 x241
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On Mon, Apr 21, 2014 at 1:50 PM, Shane Roberts <shane.apogee@gmail.com> wrote:
Hey Pamela-

I hope all is well. I was wanting to touch base with you to see if you have had time to look at the reroutes for the Sunoco PA Pipeline project Preston sent you to see if those sections would be eliminated from netting this summer.

Thanks

Shane Roberts
Director of Environmental Services
shane@apogee-environmental.com

Apogee Environmental & Archaeological, Inc.
153 Jefferson Street
Lexington, KY 40508
Office (859) 280-2284
Cell (859) 200-6242

10 YEAR
ANNIVERSARY

2003-2013

Smith, Preston

From: Easler, Kayla <kayla_easler@fws.gov>
Sent: Tuesday, May 06, 2014 5:06 PM
To: Smith, Preston; McGuirk, Jason
Cc: jdrasher@aqua-terraenv.com; Kevin Keat; Jason Tesauro; Pamela Shellenberger
Subject: Pennsylvania Pipeline USFWS #2014-0200
Attachments: Final HCP_NonHCP BMPs Guidebook 12MARCH14 (1).pdf

Preston,

This email is in response to our site visits conducted by James Drasher, Kevin Keat, Jason McGuirk, Pamela Shellenberger, you and I on April 29, 2014. The site visits were for the three sites in Cumberland County (J15, I36, and J8) and the one site in York County (H52). The Service's determinations are as followed:

J15/J13– Although the wetland does qualify as potential bog turtle habitat, the wetland area has been highly disturbed with rip-rap and encroaching fill from the adjacent housing development and its stormwater outlets. Therefore, based on our site visit of J15, the proposed pipeline work for this area is not likely to adversely affect the bog turtle.

I36 – The pipeline is proposed to go through a small portion of a cattail wetland located adjacent to Spring Street (34). This cattail wetland is connected to a large spring source and mucky channel located northeast of the proposed pipeline. Although impacts are proposed to the cattail wetland, no impacts are proposed for the large spring source and mucky channel. Based on our site visit and the location of the proposed project to known bog turtle occurrences in the watershed, the proposed pipeline work it is not likely to adversely affect the species.

J8 – This wetland is located within a highly disturbed area which looks to have been a dump/quarry site. Although this wetland contains characteristics of suitable bog turtle habitat, no impacts are proposed to this area. Additionally, we also visited the upstream portion of the identified J8 wetland. This portion of J8 is approximately 250' – 300' from the limit of disturbance and has no proposed impacts. Based on this information and the location of known bog turtle occurrences in the watershed, it is not likely that the proposed pipeline work will adversely affect the bog turtle.

H52 – The proposed limit of disturbance is approximately 250' away for this wetland. Based on the distance of the wetland to the proposed pipeline work and the location of the proposed work to a known bog turtle occurrence, we have determined that the propose pipeline work is not likely to adversely affect the bog turtle.

Additionally, I have attached the Columbia Pipeline Gas NiSource HCP Guidebook for you and Sunoco to look at. If you can scroll to the bog turtle portion, it may help explain some things and help direct the company on impacts and avoidance measures. If you have questions please email them to Pam and I and we will get back to you as soon as possible.

Thank you,

Kayla Easler
U.S. Fish and Wildlife Service
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, Pennsylvania 16801
Telephone: (814) 234-4090 **Ext. 231**
Fax: (814) 234-0748
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Smith, Preston

From: Shellenberger, Pamela <pamela_shellenberger@fws.gov>
Sent: Wednesday, May 28, 2014 2:42 PM
To: Smith, Preston
Cc: Kayla Easler (Kayla_Easler@fws.gov)
Subject: Re: Bulrush

As discussed during our April 1, 2014 conference call, we recommend that you survey for northeastern bulrush in the mountain regions of Perry and Juniata Counties, as well as the mountain regions in Blair and Cambria Counties. Let me know if you need more specifics.

Additionally, we would like a report about how Sunoco plans to minimize impacts to migratory birds. The pipeline is going through the following Important Birds Areas (IBAs):

Upper Ridley - Crum Creek from 75.481290 39.942390 to 75.543745 39.987000

Great Marsh - from 75-743259 40.096344 to 75.806473 40.135070

Hay Creek/French Creek Forest Block and Glen Morgan Lake - from 75.873104 40.175884 to 75.918854 40.204548

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Tussy Mountain - from 78.164283 40.404402 to 78.192173 40.415671

Allegheny Front - from 78.446006 40.464409 to 78.605743 40.449196

Finally, please be aware of bald eagle nests, especially when crossing large bodies of water, such as lakes or rivers. See our Bald Eagle Management Guidelines

<http://www.fws.gov/northeast/EcologicalServices/eagle.html>

I will not in the office tomorrow, but you will see Kayla.

Thank you,

Pamela Shellenberger
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Anyway, can you send me the areas we should keep an eye out for the Northeastern Bulrush?

I guess I will be coming up there on Thursday with Brad Schaeffer for the Sunoco 8-inch repair meeting, so see you guys then.

Thanks,

Preston

Preston Smith | Manager, Wetlands and Ecological Services Department

Direct: 412.921.8167 | Main: 412.921.7090 | Fax: 412.921.4040

preston.smith@tetrattech.com

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Smith, Preston

From: Shellenberger, Pamela <pamela_shellenberger@fws.gov>
Sent: Tuesday, July 01, 2014 4:12 PM
To: Smith, Preston
Cc: Christina Voorhees
Subject: Re: Bulrush

Preston,

Huntingdon County should also be targeted for surveys for this species. My apologies for leaving this off of the list.

Thank you,

Pamela Shellenberger
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Thanks,

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Direct: 412.921.8167 | Main: 412.921.7090 | Fax: 412.921.4040
preston.smith@tetrattech.com

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Smith, Preston

From: Shellenberger, Pamela <pamela_shellenberger@fws.gov>
Sent: Tuesday, August 05, 2014 2:10 PM
To: Smith, Preston
Cc: Kayla Easler (Kayla_Easler@fws.gov); McCluskey, Korey
Subject: Re: Bulrush Surveys Sunoco PA Pipeline (USFWS #2014-0200)

Correct, after identifying elevation, survey wetlands within those counties and elevation areas.

Thanks,

Pamela Shellenberger
U.S. Fish and Wildlife Service
315 South Allen Street
State College, PA 16801
814-234-4090 x241
814-234-0748 (f)

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On Tue, Aug 5, 2014 at 1:32 PM, Smith, Preston <Preston.Smith@tetrattech.com> wrote:

Hi Pam,

I hope your Summer is going well. I just wanted to follow up with a proposed strategy for the Northeastern Bulrush Surveys on the PA Pipeline Project. Since we have been through the areas that meet the elevation requirement in Cambria, Blair, Huntington, Juniata, and Perry Counties, would it be acceptable to focus our study areas on the wetland areas we have found? Based on the Life history listed on NatureServ Explorer listed below. Also, we plan to search our 200 ft survey corridor similar to other plant surveys. Please let me know if these are acceptable.

Thanks,

Preston

The habitat characteristics of *Scirpus ancistrochaetus* are discussed above in GHABCOM. More information is needed about the ecology of the species; see GRSRCHNEED.

Palustrine Habitat(s): HERBACEOUS WETLAND, TEMPORARY POOL

Habitat Comments: Throughout its range, *Scirpus ancistrochaetus* is found in open, tall herb-dominated wetlands. Often it grows at the water's edge, or in a few centimeters of water, but it may also be in fairly deep water (0.3-0.9 m) or away from standing water. In the southern part of its range, the most common habitat is sinkhole ponds, usually in sandstone. Water levels in these ponds tend to vary both with the season and from year to year. At least one site (in Massachusetts) is in a sandplain, where water level fluctuates as well. Two sites in Vermont are influenced to some extent by beaver activity as well as other hydrological factors.

With the information available it is difficult to compare sites throughout the plant's range. For example, lists of associated species may represent an entire wetland or the immediate vicinity of the plant, but this is not always possible to determine from available information. Nevertheless, examination of field reports indicates that there is considerable variety in associated species. A few species, however, are common to several of the sites. These are *Dulichium arundinaceum*, *Scirpus cyperinus* sens. lat., *Glyceria canadensis*, and *Triadenum virginicum*.

The habitat seems to vary geographically, although there are not enough sites to allow generalizations to be made. However, one does observe that in the south, sinkhole ponds are the most common habitat for the plant, and in the north, other kinds of wetlands, including beaver-influenced wetlands, provide suitable habitat.

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Sent: Tuesday, July 01, 2014 4:12 PM

To: Smith, Preston

Cc: Christina Voorhees

Subject: Re: Bulrush

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Thank you,

Pamela Shellenberger

U.S. Fish and Wildlife Service

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Thanks,

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