Pennsylvania State Historic Preservation Office Correspondence

August 20, 2014

Mr. Douglas McLearen, Chief
Division of Archaeology and Protection
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093

Re: PennEast Pipeline Company, LLC - PennEast Pipeline Project
Luzerne, Carbon, Northampton, and Buck Counties, Pennsylvania.

Dear Mr. McLearen:

The PennEast Pipeline Company, LLC (PennEast) is a partnership with UGI Energy Services (UGIES), AGL Resources, NJR Pipeline Company, and South Jersey Industries. On behalf of PennEast, URS Corporation (URS) is initiating cultural resource consultation for the proposed PennEast Pipeline Project. The PennEast Pipeline Project (Project) proposes to construct a new 100-mile, 30-inch pipeline to deliver natural gas from northeast Pennsylvania to other markets in Pennsylvania and New Jersey. This document describes the proposed undertaking for the project as it is understood at this time, as well as our proposed protocol for cultural resource investigations. The lead agency for this project is the Federal Energy Regulatory Commission (FERC). We are requesting the Pennsylvania Historical and Museum Commission's (PHMC) review of URS's plans to identify cultural resources that may be affected by the project.

Description of the Undertaking

The PennEast Pipeline Project is designed to transport natural gas from Luzerne County, Pennsylvania to the Transco Trenton-Woodbury interconnect in Mercer County, New Jersey. The Project will include construction of approximately 100 miles of new 30-inch pipeline, three compressor stations, and three taps/interconnects. In Pennsylvania, the Project will extend approximately 72 miles from UGI Energy Services' (UGIES) compressor station in Luzerne County to the Delaware River in Bucks County. A series of USGS-based maps depicting the approximate location of the project is included with this letter (Attachment A).

As part of the pipeline route evaluation process, PennEast has undertaken a thorough Critical Issues Assessment (CIA). The CIA initially focused on the identification of a series of corridors to determine which were most feasible from an environmental and engineering perspective. The selected route corridor was then analyzed using federal, state and regional databases to map out resources in proximity to the corridor. Once this mapping was completed, the route was sequentially evaluated along its entirety, and the centerline adjusted to avoid and/or minimize impacts to resource areas.

The following discussion outlines the results of background research conducted to date, as well as a proposed methodology for identification of archaeological and above-ground resources within the Area of Potential Effects (APE). The APE for direct effects includes all currently known areas of potential project-related ground disturbance. The APE for visual effects includes locations from which elements of the pipeline project may be visible, including potential changes to the landscape. The study corridor for cultural resource surveys is 400 feet wide. Within that 400-foot corridor, the pipeline will be constructed within a right-of-way (ROW) of approximately 100 feet encompassing both temporary and permanent ROW. The study corridor is wider than the disturbance area to allow for minor alignment shifts to avoid any sensitive resources that may be identified during the environmental field investigations.

Background Research

URS consulted the files of the PHMC in July 2014 in an effort to determine the extent of previous cultural resource surveys in the vicinity of the project alignment, and to assess the density of inventoried cultural resources in the region. The PHMC's online Cultural Resource Geographic Information System (CRGIS) system was consulted to gather locational and other data on previously recorded archaeological sites, architectural resources, and cultural resource surveys as maintained in the Pennsylvania Archaeological Site Survey (PASS) files and the Historic Resource Inventory (HRI). A one-mile study area on either side of the proposed centerline was used to identify an adequate sample of previously recorded sites from which to derive information regarding the expected types and settings of sites in the vicinity of the project. A one-quarter-mile study area on either side of the proposed centerline was used to identify architectural resources

Background research identified 98 PASS-inventoried archaeological sites within the one-mile study area. Seven archaeological sites are mapped partly or wholly within the 400-foot study corridor: 36LU149, 36LU150, 36NM75, 36NM76, 36NM180, 36BU119, and 36BU123. None of these sites have been evaluated for listing on the National Register of Historic Places (NRHP). Twenty-three architectural resources are located within the one-quarter-mile study area. Further discussion of archaeological and architectural resources is provided in the sections below. The locations of archaeological sites and architectural resources are depicted in Attachments B and C, respectively.

Previous Cultural Resources Surveys

Archaeological investigations associated with 32 projects have been conducted within one mile of the study corridor. These investigations ranged from a few acres for small commercial developments to longer linear surveys for pipelines and highways. Although the majority of these investigations were Phase I identification-level surveys, several Phase II site evaluations and two data recovery excavations have also been conducted. Archaeological sites encountered by these surveys have primarily been prehistoric Native American sites that ranged from briefly occupied surface sites to longer-term camps in stratified contexts. The results of these investigations and others in the Susquehanna River and Delaware River drainages will be used to

develop contexts for the evaluation of the potential NRHP-eligibility of sites identified in the Phase I archaeological investigation for the current project. In addition, many of the Phase I and II surveys have included geomorphological investigations on alluvial landforms of streams and rivers crossed by the current project, which will permit an informed approach to the identification of archaeological sites in these settings.

Previously Recorded Archaeological Sites

Ninety-eight previously recorded archaeological sites were identified within one mile of the proposed centerline and are presented in Table 1. General site characteristics are summarized, including site type, temporal component, landform setting, and approximate lateral distance to the current study corridor. The NRHP eligibility status for each of these sites as recorded in the CRGIS is listed in the table below as either: Undetermined (U), Not Eligible (NE), Eligible (E), or Listed (L). Sites within the 400-foot study corridor are listed in the table below as SC; those outside of the study corridor but within the one-mile study area are listed SA.

Seven of the 98 recorded archaeological sites are located either partially or wholly within the 400-foot study corridor. Sites 36LU0149 and 36LU0150 intersect the study corridor at Milepost 22.6 and 22.7, respectively. Site 36LU0149 is a nineteenth-century farmstead, and site 36LU0150 is a nineteenth-century wooden dam. The NRHP status of these sites is undetermined. Site 36NM0075 is located on a slope overlooking the Lehigh River at Milepost 29.5. The site is a prehistoric Native American site of unknown temporal affiliation; its NRHP status is undetermined. Site 36NM0076, a Native American site dated to the Late and Terminal Archaic, is located on a slope above a Lehigh River tributary and intersects the study corridors at Milepost 66.9. The NRHP eligibility of this site is undetermined. Site 36NM0180 is a nineteenth-century domestic site located on a hilltop at Milepost 64.4. Its NRHP status has not been determined. Site 36BU0119 is a temporally undefined Native American site located on a terrace of the Delaware River at Milepost 72.2. Its NRHP status is undetermined; however the CRGIS record indicates that hearth features have been identified at the site. Site 36BU0123 is a temporally undefined Native American site located on a hilltop at Milepost 71.5; its NRHP status is undetermined.

Ninety-one of the 98 recorded archaeological sites are located outside of the 400-foot study corridor, but within one-quarter-mile of the proposed centerline. The majority of these sites (62) are prehistoric Native American sites ranging from Paleoindian through Late Woodland in age. Twenty-three are historic Euro-American sites dating from the late eighteenth century through the early twentieth century. Six sites have both historic and prehistoric components. One site (36LU0181) is NRHP-listed, four sites (36NM0116, 36NM0117, 36BU0001, 36BU0005) are NRHP-eligible, and five sites (36LU0125, 36LU0305, 36NM0175, 36NM0176, 36NM0160) have been determined not eligible for listing on the NRHP. The NRHP status of the remaining 88 sites is undetermined.

Table 1: Previously Recorded Archaeological Sites Within One Mile of the Study Corridor

Site ID	Type	Temporal Component	Setting	NRHP Status	Relationship to Study Corridor
36LU0005	Open Habitation	Prehistoric: Archaic, Woodland	Hillslope	U	SA (MP 2.8)
36LU0006	Rockshelter/Cave	Prehistoric: Late, Terminal Archaic, Early through Late Woodland	Hillslope	U	SA (MP 2.9)
36LU0030	Rockshelter/Cave	Prehistoric: Early and Late Woodland	Hilltop	U	SA (MP 13.7)
36LU0044	Open Habitation	Prehistoric: Archaic, Middle and Early Woodland	Floodplain	U	SA (MP 6.5)
36LU0045	Open Habitation	Prehistoric: No data	Floodplain	U	SA (MP 6.8)
36LU0047	Open Habitation	Prehistoric: Late Archaic	Floodplain	U	SA (MP 6.6)
36LU0065	Rockshelter/Cave	Prehistoric Woodland	Hillslope	U	SA (MP 22.3)
36LU0082	Open Habitation	Prehistoric: Archaic, Woodland	Floodplain	U	SA (MP 7.1)
36LU0088	Open Habitation	Prehistoric: No data	Stream bench	U	SA (MP 22.7)
36LU0103	Rockshelter/Cave	Prehistoric: No data	Hillslope	U	SA (MP 10.0)
36LU0110	Open Habitation	Prehistoric Archaic, Late Woodland	Floodplain	U	SA (MP 7.1)
36LU0121	No data	Prehistoric: No data Historic: No data	Floodplain	U	SA (MP 7.2)
36LU0124	No data	Historic: No data	Floodplain	U	SA (MP 6.8)
36LU0125	Unknown	Prehistoric: Late Archaic, Late Woodland	Stream bench	NE	SA (MP 7.1)
36LU0127	Domestic	Historic: Mid-19th c.	Floodplain	U	SA (MP 6.5)
36LU0149	Domestic	Historic: 19th c.	Floodplain	U	SC (MP 22.6)
36LU0150	Industrial	Historic: 19th c.	Upland Flat	U	SC (MP 22.7)
36LU0155	Unknown	Historic: Early 20th c.	Upland Flat	U	SA (MP 19.6)
36LU0181	Domestic	Historic: Late 18th to mid-19th c.	Floodplain	L	SA (MP 5.5)
36LU0305	Unknown surface scatter	Prehistoric: No data	Terrace	NE	SA (MP 6.5)
36CR0026	Open Habitation	Prehistoric: No data	Floodplain	U	SA (MP 47.0)
36CR0027	Open Habitation	Prehistoric: Late Archaic	Floodplain	U	SA (MP 47.0)
36CR0029	Open Habitation	Prehistoric: No data	Floodplain	U	SA (MP 46.8)
36CR0058	Open Habitation	Prehistoric: Late Archaic	Hill Ridge/Toe	U	SA (MP 38.9)
36CR0059	Industrial	Historic: No data	Hillslope	U	SA (MP 38.6)

Table 1: Previously Recorded Archaeological Sites Within One Mile of the Study Corridor

Site ID	Type	Temporal Component	Setting	NRHP Status	Relationship to Study Corridor
36CR0060	Domestic	Historic: No data	Hillslope	U	SA (MP 38.9)
36CR0061	Open Habitation	Prehistoric: No data	Hillslope	U	SA (MP 39.2)
36CR0083	Open Habitation	Prehistoric: Early Archaic through Late Woodland	Floodplain	U	SA (MP 46.8)
36CR0098	No data	Historic: 19th through Early 20th c.	Lower slopes	U	SA (MP 41.6)
36CR0099	Lithic Reduction	Prehistoric: Late and Terminal Archaic, Late Woodland	Terrace	U	SA (MP 41.9)
36CR0100	Lithic Reduction	Prehistoric: Archaic, Woodland	Stream bench	U	SA (MP 41.5)
36CR0102	Lithic Reduction	Prehistoric: Middle and Late Archaic	Floodplain	U	SA (MP 42.0)
36CR0146	Industrial	Historic: No data	Middle slopes	U	SA (MP 22.4)
36NM0050	Open Habitation	Prehistoric: Late and Terminal Archaic	Stream bench	U	SA (MP 58.5)
36NM0071	Open Habitation	Prehistoric: Late Archaic	Floodplain	U	SA (MP 69.5)
36NM0075	Open Habitation	Prehistoric: No data	Hillslope	U	SC (MP 66.3)
36NM0076	Open Habitation	Prehistoric: Late and Terminal Archaic	Hillslope	U	SC (MP 66.9)
36NM0086	Open Habitation	Prehistoric: Terminal Archaic	Hillslope	U	SA (MP 68.1)
36NM0088	Open Habitation	Prehistoric: Late Archaic through Early Woodland, Late Woodland	Hillslope	U	SA (MP 68.1)
36NM0089	Open Habitation	Prehistoric: Late Archaic	Saddle	U	SA (MP 66.7)
36NM0090	Open Habitation	Prehistoric: No data	Hillslope	U	SA (MP 67.9)
36NM0115	Open Habitation	Prehistoric: No data	Floodplain	U	SA (MP 66.7)
36NM0116	Quarry	Prehistoric: No data	Hillslope	E	SA (MP 66.5)
36NM0117	Open Habitation	Prehistoric: Late and Terminal Archaic	Hillslope	E	SA (MP 66.5)
36NM0135	Domestic	Historic: No data	Hillslope	U	SA (MP 66.6)
36NM0136	Commercial	Historic: No data	Hillslope	U	SA (MP 65.6)
36NM0137	Industrial	Historic: No data	Hillslope	U	SA (MP 66.9)
36NM0138	Lithic Reduction	Prehistoric: Late Archaic through Early Woodland, Late Woodland	Stream bench	U	SA (MP 69.2)
36NM0140	Open Habitation	Prehistoric: Late Archaic, Late Woodland	Floodplain	U	SA (MP 65.7)
36NM0143	Open Habitation	Prehistoric: Late Archaic, Early Woodland	Stream bench	U	SA (MP 67.9)

Table 1: Previously Recorded Archaeological Sites Within One Mile of the Study Corridor

Site ID	Type	Temporal Component	Setting	NRHP Status	Relationship to Study Corridor
36NM0156	Historic and Prehistoric	Prehistoric: No data Historic: No data	Hillslope	U	SA (MP 64.9)
36NM0157	Lithic Reduction	Prehistoric: No data	Hillslope	U	SA (MP 63.4)
36NM0158	Lithic Reduction	Prehistoric: No data	Hillslope	U	SA (MP 63.6)
36NM0159	Lithic Reduction	Prehistoric: Late Archaic	Hillslope	U	SA (MP 63.6)
36NM0160	Industrial	Historic: 19th c.	Hillslope	NE	SA (MP 65.9)
36NM0161	Domestic	Historic: 19th c.	Upland flat	U	SA (MP 62.1)
36NM0162	Lithic Reduction	Prehistoric: No data	Stream bench	U	SA (MP 62.7)
36NM0164	Lithic Reduction	Prehistoric: No data	Stream bench	U	SA (MP 65.9)
36NM0175	Historic and Prehistoric	Prehistoric: No data Historic: No data	Floodplain	NE	SA (MP 58.7)
36NM0176	Historic and Prehistoric	Prehistoric: No data Historic: No data	Floodplain	NE	SA (MP 58.7)
36NM0180	Domestic	Historic: 19th c.	Hilltop	U	SC (MP 64.4)
36NM0182	Domestic	Historic: 20th c.	Lower slopes	U	SA (MP 62.7)
36NM0184	Historic and Prehistoric	Prehistoric:Early, Middle and Terminal Archaic, Early and Late Woodland Historic: 19th c.	Floodplain	U	SA (MP 65.6)
36NM0185	Industrial	Historic: 19th and Early 20th c.	Hillslope	U	SA (MP 65.8)
36NM0188	Domestic	Historic: No data	Lower slopes	U	SA (MP 60.8)
36NM0189	Domestic	Historic: 19th c.	Lower slopes	U	SA (MP 60.0)
36NM0190	Domestic	Historic: 19th c.	Stream bench	U	SA (MP 67.9)
36NM0215	Lithic Reduction	Prehistoric: No data	Lower slopes	U	SA (MP 57.1)
36NM0216	Domestic	Historic: 19th c.	Lower slopes	U	SA (MP 57.2)
36NM0217	Lithic Reduction	Prehistoric: No data	Lower slopes	U	SA (MP 57.2)
36NM0218	Lithic Reduction	Prehistoric: No data	Lower slopes	U	SA (MP 57.0)
36NM0219	Domestic	Historic: 19th c.	Lower slopes	U	SA (MP 57.1)
36NM0221	Open Habitation	Prehistoric: No data	Lower slopes	U	SA (MP 66.6)

Table 1: Previously Recorded Archaeological Sites Within One Mile of the Study Corridor

Site ID	Type	Temporal Component	Setting	NRHP Status	Relationship to Study Corridor
36NM0291	Open Habitation	Prehistoric: Middle Archaic through Early Woodland	Floodplain	U	SA (MP 65.8)
36NM0294	Open Habitation	Prehistoric: No data	Floodplain	U	SA (MP 66.1)
36NM0301	Open Habitation	Prehistoric: Middle Archaic through Early Woodland	Upland flat	U	SA (MP 62.6)
FortNM01	Military	Historic: 18th c.	Lower slopes	U	SA (MP 58.6)
36BU0001	Open Habitation	Prehistoric: Late Woodland	Terrace	E	SA (MP 73.3)
36BU0004	Open Habitation	Prehistoric: Archaic	Floodplain	U	SA (MP 72.2)
36BU0005	Village	Prehistoric: Early and Late Woodland	Terrace	E	SA (MP 74.8)
36BU0026	Quarry	Prehistoric: No data	Upper Slopes	U	SA (MP 72.0)
36BU0112	No data	Prehistoric: No data	Terrace	U	SA (MP 72.3)
36BU0113	No data	Prehistoric: No data	Terrace	U	SA (MP 72.2)
36BU0114	No data	Prehistoric: No data	Saddle	U	SA (MP 72.3)
36BU0115	No data	Prehistoric: No data	Terrace	U	SA (MP 71.6)
36BU0118	Village	Prehistoric: Early and Late Woodland	Floodplain	U	SA (MP 73.4)
36BU0119	No data	Prehistoric: No data	Terrace	U	SC (MP 72.2)
36BU0120	No data	Prehistoric: No data	Terrace	U	SA (MP 72.1)
36BU0121	No data	Prehistoric: No data	Floodplain	U	SA (MP 71.5)
36BU0122	No data	Prehistoric: No data	Terrace	U	SA (MP 71.1)
36BU0123	No data	Prehistoric: No data	Hilltop	U	SC (MP 71.5)
36BU0196	Rockshelter/Cave	Prehistoric: Early and Middle Archaic	Hillslope	U	SA (MP 72.2)
36BU0217	Open Habitation	Prehistoric: Paleoindian	Upper slopes	U	SA (MP 72.1)
36BU0263	Open Habitation	Prehistoric: No data	Floodplain	U	SA (MP 81.8)
36BU0315	Village	Prehistoric: Early and Late Woodland	Floodplain	U	SA (MP 72.2)
36BU0403	Historic and Prehistoric	Historic: 19th c. Prehistoric: Woodland	Floodplain	U	SA (MP 71.9)
36BU0404	Domestic	Historic: 19th c.	Terrace	U	SA (MP 71.9)
36BU0411	Commercial	Historic: 19th c.	Floodplain	U	SA (MP 71.9)

Previously Recorded Above-Ground Resources

The CRGIS research conducted for this project identified a total of 23 previously identified resources located within the one-quarter-mile study area. There are ten National Register listed and eligible resources identified in the study area, including two National Register-eligible districts, five National Register-eligible buildings, one National Register listed object, and two National Register-Listed buildings (Table 2). National Register eligibility has not been determined for eight of the 23 inventoried historic architectural resources within one-quarter-mile of the study corridor (Table 3). In addition, there are five aggregate file resources extending across multiple counties that are not listed in Tables 2 and 3: Lehigh Valley Railroad (BHP Key #156109), Lehigh Valley Railroad (BHP Key # 126031), Lehigh & New England Railroad (BHP Key #156534), Lehigh & New England Railroad (BHP Key # 156534) and the Central Railroad of New Jersey (BHP Key #155754). Tables 2 and 3 list these historic architecture resources in addition to information specific to their location and NRHP status.

Table 2: NRHP Listed and Eligible Above-Ground Resources within 1/4 Mile of the Study Corridor

BHP Key #	Municipality	County	Resource Name	NR Status	Resource Type
000731	Wyoming Borough	Luzerne	Swetland Mansion	Listed	Building
115265	Wyoming Borough	Luzerne	Wyoming Monument	Listed	Object
144291	Lower Towamensing/ Moore Twps.	Carbon/ Northampton	Appalachian Trail	SHPO: Eligible	District
157176	Moore Twp.	Northampton	Fehnel Farm	SHPO: Eligible	Building
096309	Bethlehem Twp.	Northampton	Hopeville Historic District	SHPO: Eligible	District
096308	Lower Saucon Twp.	Northampton	Redington Steel Works: Proving Grounds	SHPO: Eligible	Building
086688	Lower Saucon Twp.	Northampton	Site No. 3: Farmhouse, Barn, & Outbuildings	SHPO: Eligible	Building
096307	Lower Saucon Twp.	Northampton	Oberly, Anthony, Farm: Baker Farm	SHPO: Eligible	Building
143013	Lower Saucon Twp.	Northampton	Christman Farm; Pichel Farm	SHPO: Eligible	Building
123914	Williams Township	Northampton County	Stout, Issac, House	Listed	Building

Table 3: Previously Identified Undetermined Above-Ground Resources within 1/4 Mile of the Study Corridor

BHP Key #	Municipality	County	Resource Name	Resource Type
86551	Wyoming Borough	Luzerne	Crawford House	Building
097158	Jenkins Township	Luzerne	Blanchard, Jeremiah, House	Building
101075	Bethlehem Township	Northampton	Walter Farm	District
086674	Lower Saucon Township	Northampton	Limekiln	Structure
098081	Durham Township	Bucks	1215 County Line	Building
156670	Dallas Township	Luzerne	Hildebrandt Farmstead	Building
126031	Jenkins Township	Luzerne	Port Blanchard Village	District
155212	Bethlehem Township	Northampton	Emrick, George, Farm; Riverside Campus West	Building

Historic Mapping Data

The proposed pipeline route was overlaid on nineteenth century maps and atlases of each of the counties crossed by the project (e.g.. Beers 18736 *Atlas of Luzerne County, Pennsylvania*). These sources show a number of structures near the study corridor which may now represent historic archaeological sites. As project research is further developed, URS will assess which, if any, of these map-documented structures have the potential to be directly or indirectly impacted by the project.

Preliminary Geomorphological Assessment

In consultation with Dr. Frank Vento, Geomorphologist, stream order was used to initially assess the potential for buried archaeological sites at each of the stream crossings and areas where the study corridor intersects potential alluvial soils. Stream crossings with moderate to high potential for buried, intact archaeological sites are listed in Table 4 from north to south along the proposed pipeline.

Table 4: Geomorphological Assessment of the Proposed Alignment

Stream Name	Stream Order	Potential for Site Burial	Milepost
Susquehanna River	4th	High	6.5-7.5
Lehigh River	3rd	Moderate	22.7-22.8
Pohopoco Creek	3rd	Moderate	42.0
Aquashicola Creek	3rd	Moderate	46.1
Lehigh River	4th	High	65.1-65.9
Delaware River	4th	High	71.0-72.6

The majority of crossings will be made through small rills, as well as first- and second-order streams. These streams typically exhibit moderate to steep gradients, straight to weak meandering channel habits, low discharges and relatively thin (less than 3.3 feet) Holocene vertical accretion deposits. As a result they possess valley bottom zones which lack flights of terraces above the aggrading flood plain zone. The potential for site burial is assessed as low. Third- and fourth-order streams generally display lower gradients, higher discharges, and wider valley bottom zones. Many possess a weak to well-developed meandering channel habit and higher terraces. The profiles have the potential to contain multiple stacked solas along the lower aggrading terraces with single well-developed pedons occurring on the higher terraces well above the 100-year floodway zone. Holocene alluvial packages are anticipated to range between 3.3 feet. and 14 feet. in thickness. These streams are assessed as having a medium to high potential for buried archaeological sites.

Archaeological Sensitivity Model

The archaeological sensitivity model created for the project is a simple weighted combination of environmental features including topographic slope and the distance to wetlands, streams, water bodies, and the Lockatong geologic formation. The objective of this model is to identify areas that are within proximity to valuable hydrologic resources and on soils suitable for habitation. In addition, the Lockatong geologic formation was factored into this model to account for the potential presence of Native American argillite quarry sites that may not be accounted for by topography and hydrology alone. By weighing each factor individually, the model is able to not only identify they suitability of single attributes as well as the combination of attributes. The theoretical underpinning of this model is simply that suitable ground and access to water are the most basic factors for habitation choices. Referred to as a "Camping model," this approach mirrors how archaeologists have been locating sites for decades, but uses the availability of digital data to apply it over a large area. Clearly, there are many potential habitation locations that such a model will not identify, but this model is intended primarily as a guide to the field effort and does not replace in-field decisions for locating judgmental test locations, which are equally, if not more, important.

The assignment of weights to the classification environmental variables allows the archaeologist to rank the importance of certain measures. There are various ways to weight a model factor, which include arbitrary assessment, inductive assessment based on known site locations, deductive assessments based on an a priori theory, or a combination of these. This model uses the theory that lower slopes and proximity to the Lockatong formation and water resources have a large influence on the location of most Native American archaeological sites. As such, each of the variables is weighted so that the more level or closer to a water resource or argillite-bearing geology an area is the greater the sensitivity for Native American archaeological sites. To create the weights, layers were created in a GIS to represent the topographic slope (percent), distance to the Lockatong bedrock geology formation, streams from the National Hydrologic Dataset (high resolution), and the wetlands and water bodies of the National Wetland Database and assigned weights from 10 to 1 based on a preference for lower slopes and proximity to water. Following

this, the weights of slope and distance to the Lockatong formation were added to the hydrologic resources to create the final set of weights. The final model had a range of weights from 2.5 to 41.

To create the thresholds of high, moderate, and low sensitivity, the weights were divided based on the percent of known sites located within each weight class and the amount of area that class occupied in the study area. The intention of this is to balance an acceptably high correct classification rate for known sites while at the same time not diluting the survey efficiency. The final classification of high and moderate sensitivity accounts for 70 percent of the known archaeological sites within a two-mile study area for the length of the project. Eighteen percent of the sites are located within low sensitivity areas and 12 percent within slopes greater than 15 percent. Given the high degree of variability for archaeological site location and environmental variation, this model will assist in targeting field work by correctly identifying the location of a large percent of known sites. Clearly, no single model can account for the full range of Native American habitation location decisions; therefore this model is simply a guide for the field effort. The true assessment of sensitivity will take place within the field where field directors can use on-the-ground observations to modify the model's recommendations and set the testing interval accordingly.

Proposed Methodology for Field Survey

Archaeological Resources

Methods for the identification of archaeological sites will be consistent with the PHMC's guidelines: *Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations* (2008). The 400-foot study corridor will be visually inspected to identify rockshelters, foundations, or other surface indications of archaeological sites regardless of field conditions (i.e. in areas of excessive slope, standing water). Based on the archaeological sensitivity model, previous archaeological surveys, and accepted practice, relatively level landforms within approximately 300 feet of perennial water sources and similar settings adjacent to previously-recorded archaeological sites are categorized as having a high probability for the presence of archaeological sites. In addition, areas in proximity to historic roads and structure locations indicated on historic maps are also categorized as high probability areas. Areas of moderate probability encompass level to gently sloping landforms between approximately 300 and 600 feet from a perennial water source. Areas with a low probability to contain archaeological sites include areas of steeper slope (≥ 12 percent) and areas at more than 600 feet distant from perennial water sources.

Geomorphological investigations will be conducted at stream crossings within the 400-foot study corridor that may contain buried archaeological sites. These investigations will be carried out in the early stages of Phase I archaeological fieldwork and will guide the methods used to identify archaeological sites.

Subsurface testing in high probability areas will be accomplished by shovel test pits (STPs) excavated at 15-meter intervals on landforms where archaeological sites can be demonstrated to occur within one meter of the surface. In high probability areas where archaeological sites may be present below one meter, test units (TUs) measuring one-meter-square or larger will be excavated at 30-meter intervals. Subsurface testing in medium probability areas will be conducted by STPs at 30-meter intervals, with closer-interval STPs excavated on a judgmental basis. STPs in low sensitivity areas will be excavated on a judgmental based (i.e. near locally prominent landforms, chert outcrops).

In portions of the study corridor where soil visibility is greater than 70 percent (except in areas of no-till agriculture), systematic inspection of the surface for artifacts will be conducted along transects spaced at 3.0-meter intervals in high probability areas. Surface survey transects in areas of medium and low probability will be spaced at 6.0-meter intervals. In general, subsurface testing will not be conducted on excessive slopes (≥ 15 percent slope) or in areas of standing water. As noted above, these settings will be visually inspected for the presence of rockshelters, lithic sources, and structural remnants. If evidence of these features is identified in areas of excessive slope or standing water, subsurface testing will be conducted on a judgmental basis.

All soils from STPs and TUs will be excavated by natural horizons. Soils from each horizon will be screened separately through one-quarter-inch wire mesh. Data from STPs and TUs will be recorded on standardized forms. Soil profiles will be recorded using the Munsell color system and standard texture classifications. Excavations will be completely backfilled, compacted, and the sod replaced. The location of survey transect beginning and end points, STPs, TUs, surface artifacts, and features will be mapped with a hand-held Global Positioning System (GPS) unit with sub-meter accuracy. Digital photography will be used to record surface conditions, select excavation profiles, cultural features, and identified archaeological sites.

Above-ground Resources

There is potential for the PennEast pipeline to cross through parcels containing above-ground resources, including agricultural buildings and landscape features that are fifty years of age or older. Parcels with historic above-ground resources may be physically impacted by the construction of a pipeline in the form of tree cutting and other alterations to the landscape, and may be visually impacted by the construction of above-ground pipeline facilities (including compressor stations).

URS proposes that the pipeline area of potential effects (APE) for above-ground historic resources be limited to the boundaries of parcels that are crossed by the proposed project survey corridor. Where new above-ground facilities such as compressor stations are proposed, a one-quarter-mile visual APE is recommended. It is anticipated that the project area will include three compressor stations and that their locations will be known during the reconnaissance survey.

Secretary of the Interior-qualified architectural historians will conduct an architectural history field reconnaissance of parcels along the Preferred Alignment containing above-ground resources 50 years of age or older in the APE. This survey will include documentation of both previously recorded and newly identified historic resources that are in the APE for historic above-ground resources. All resources included in the survey will be documented with high resolution digital photography and will be plotted on maps.

URS will submit PHMC short forms for parcels in the APE containing resources aged fifty years of age or older that are clearly not eligible for the National Register as recommended in PHMC's Survey Guidelines for Pipeline Projects using data from the reconnaissance survey. This includes properties that are intersected by the proposed study corridor as well as properties in the visual APE of proposed compressor stations. URS will follow the PHMC guidelines for historic resource survey short forms.

For resources that are 50 years or older and outside the category of "clearly not eligible", a modified tabular Identification Documentation Submission will be submitted to PHMC. For agricultural properties, URS will follow the Survey Guidelines for Pipeline Projects published by your PHMC Bureau for Historic Preservation in June 2013. This table will also include any non-agricultural historic above-ground resources that we document in the APE along with our research recommendations. All resources included in the survey will be documented with high resolution digital photography and will be plotted on maps. URS will submit to PHMC the Identification Documentation Submission. PHMC may require intensive level survey of a limited number of resources that are submitted for their review. URS will complete full historic resource survey forms for such resources.

URS

PennEast PIPELINE

Unanticipated Discovery Plan

Before the project begins, the FERC requires the development of a SHPO-approved Unanticipated Discovery Plan (UDP). The UDP is included with this letter as Attachment D for your review and concurrence.

URS would appreciate your consideration of the enclosed material and timely response to the proposed investigations as described herein. I look forward to hearing from you, but in the meantime should you have any questions please feel free to contact me at (717) 635-7942 or at andrew.wyatt@urs.com.

Sincerely,

URS Corporation
Andrew Wyatt, Senior Archaeologist
4507 North Front Street, Suite 200
Harrisburg, PA 17110

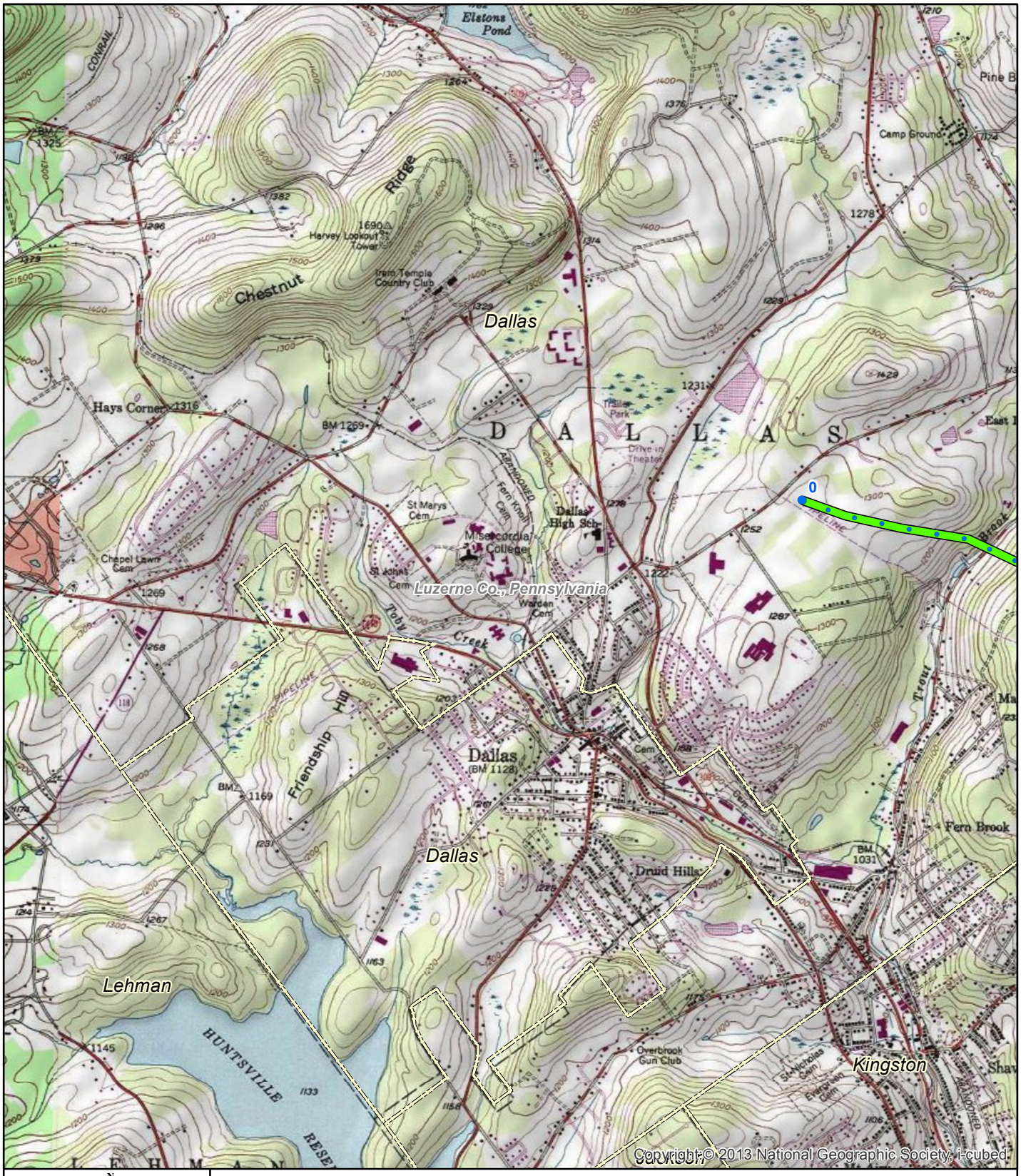
ATTACHMENT A: USGS-based Map of the PennEast Pipeline Project

ATTACHMENT B: Project Maps with Previously-Recorded Archaeological Sites and Archaeological Sensitivity Model Overlay

ATTACHMENT C: Project Maps with Previously Recorded Architectural Resources

ATTACHMENT D: Unanticipated Discovery Plan

ATTACHMENT A: USGS-based Map of the PennEast Pipeline Project



Reference: USGS Topographic Quadrangle

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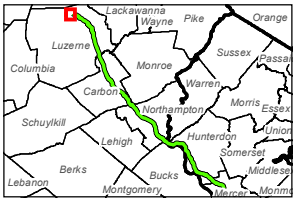
Legend

Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

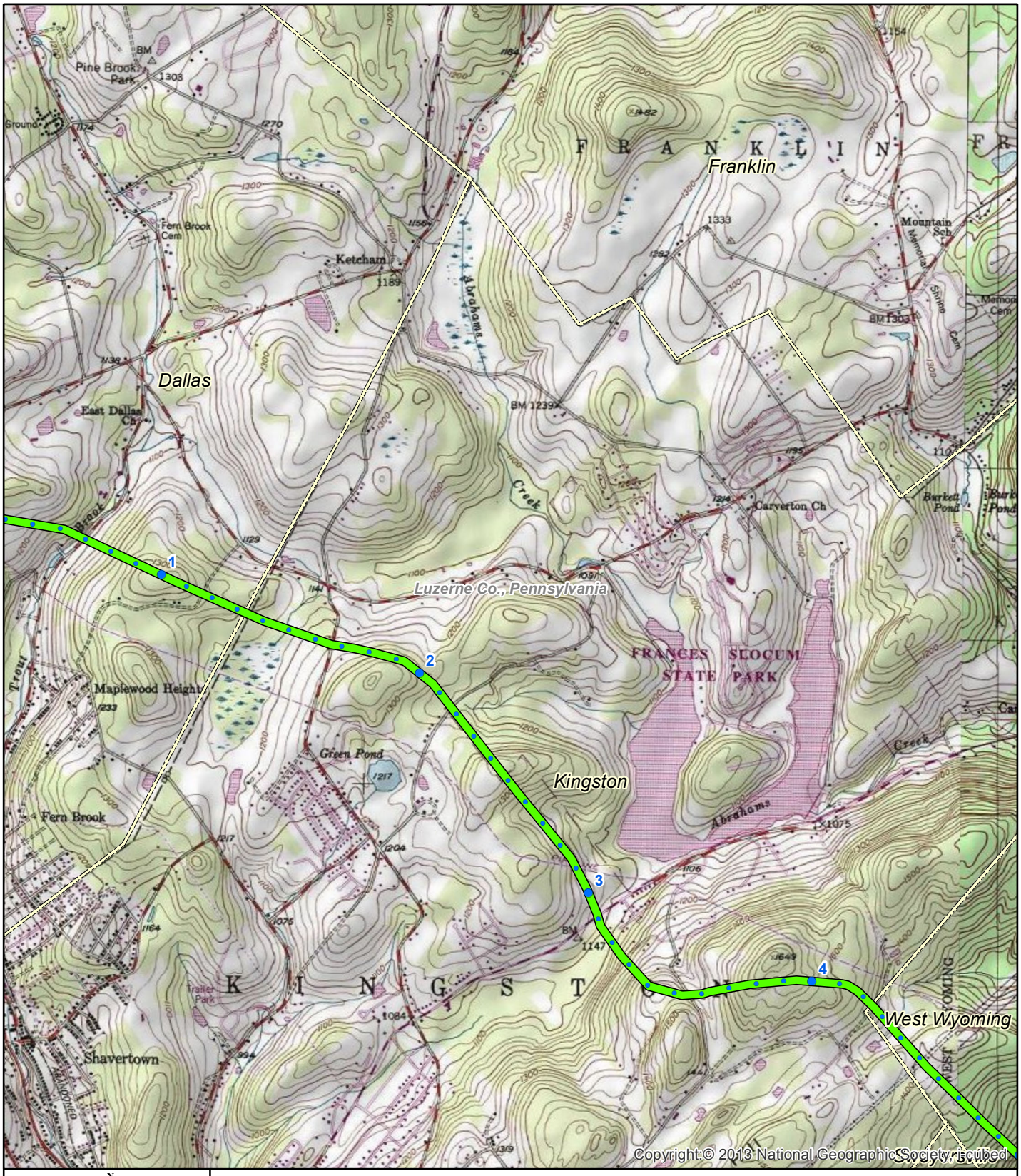
PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Kingston Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 1 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC



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Reference: USGS Topographic Quadrangle

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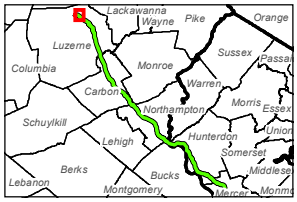
Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

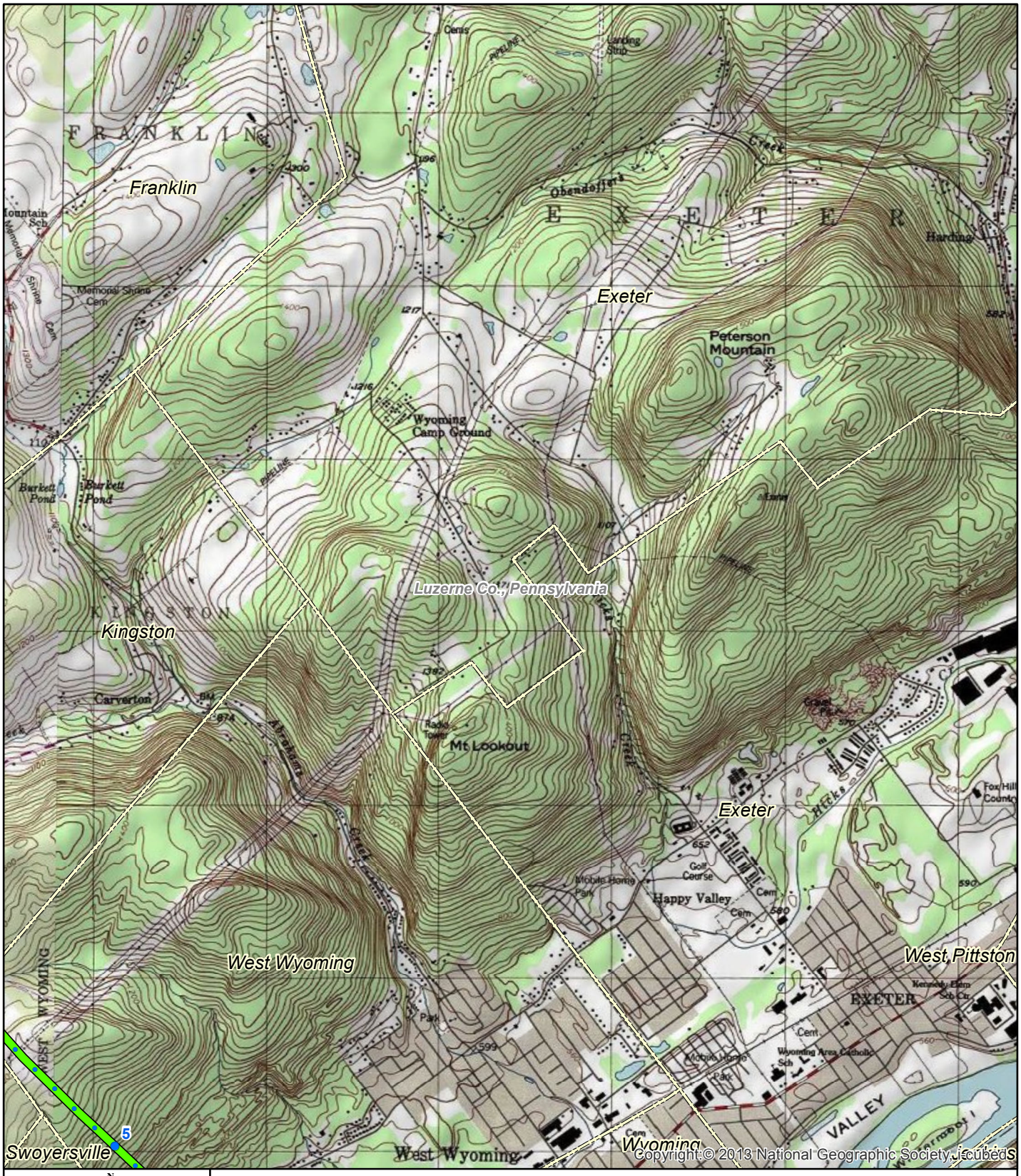
PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Kingston Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 2 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC



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Reference: USGS Topographic Quadrangle

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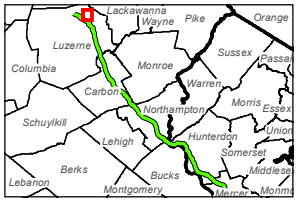
Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

PennEast Pipeline Project
USGS Topographic Quadrangle Map



PennEast PIPELINE

PennEast Pipeline Company, LLC

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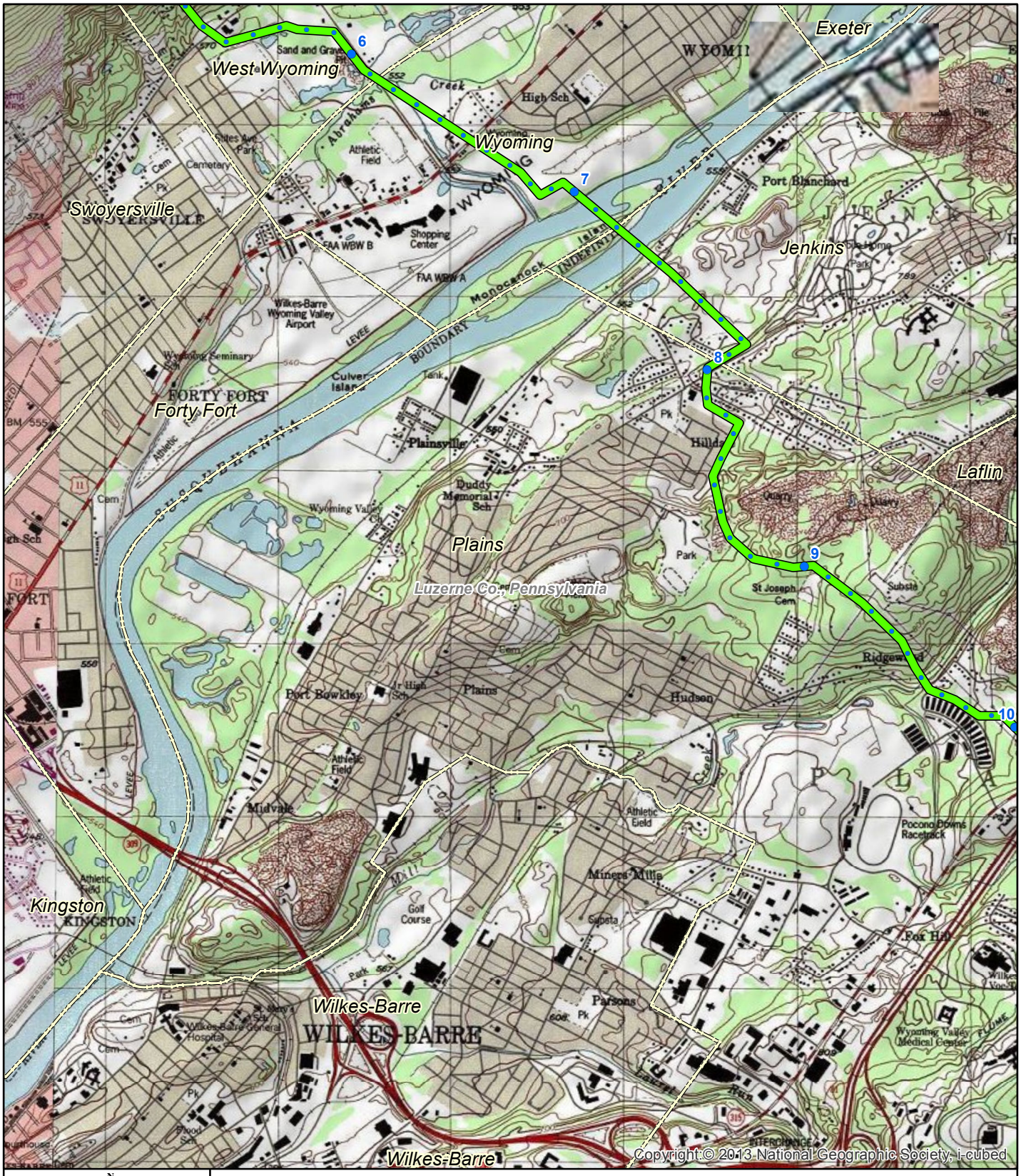

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Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

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PennEast Pipeline Project
USGS Topographic Quadrangle Map

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CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
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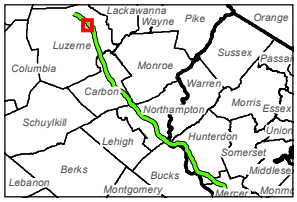

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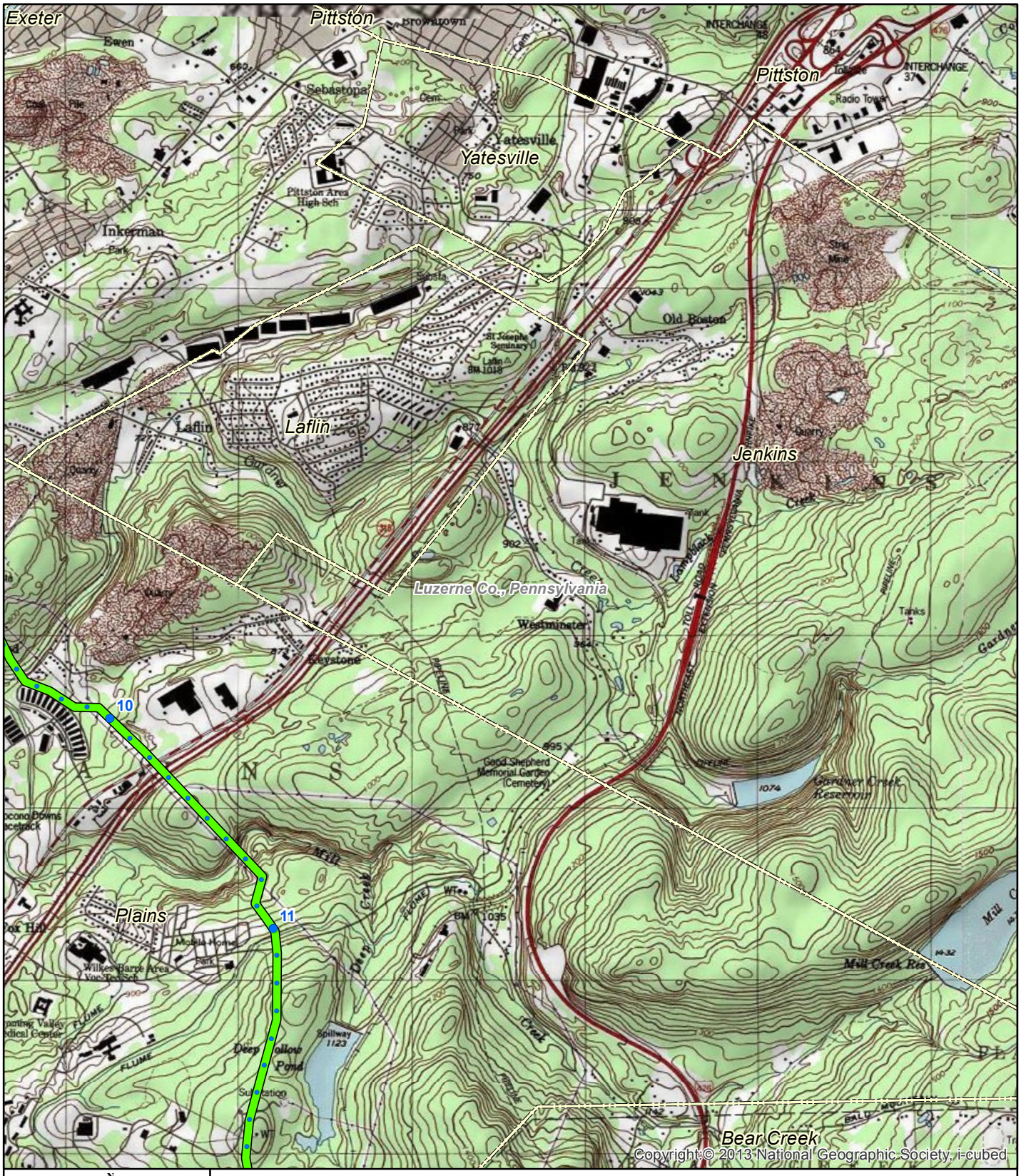

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Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

PennEast Pipeline Project
USGS Topographic Quadrangle Map

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CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
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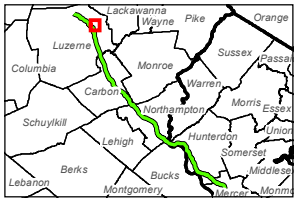
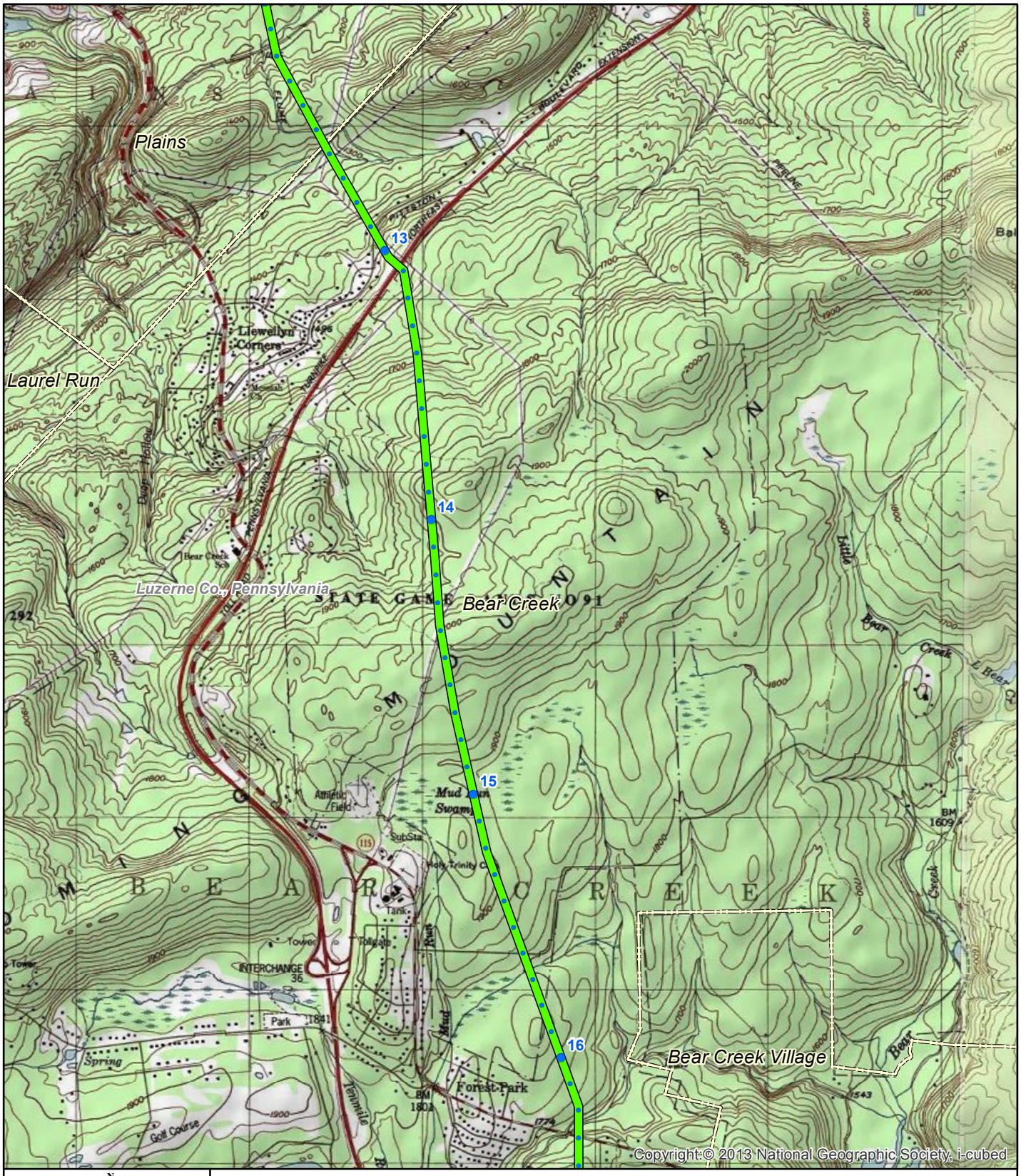


PennEast PIPELINE

PennEast Pipeline Company, LLC



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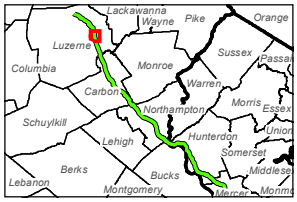
Reference: USGS Topographic Quadrangle

Legend

Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

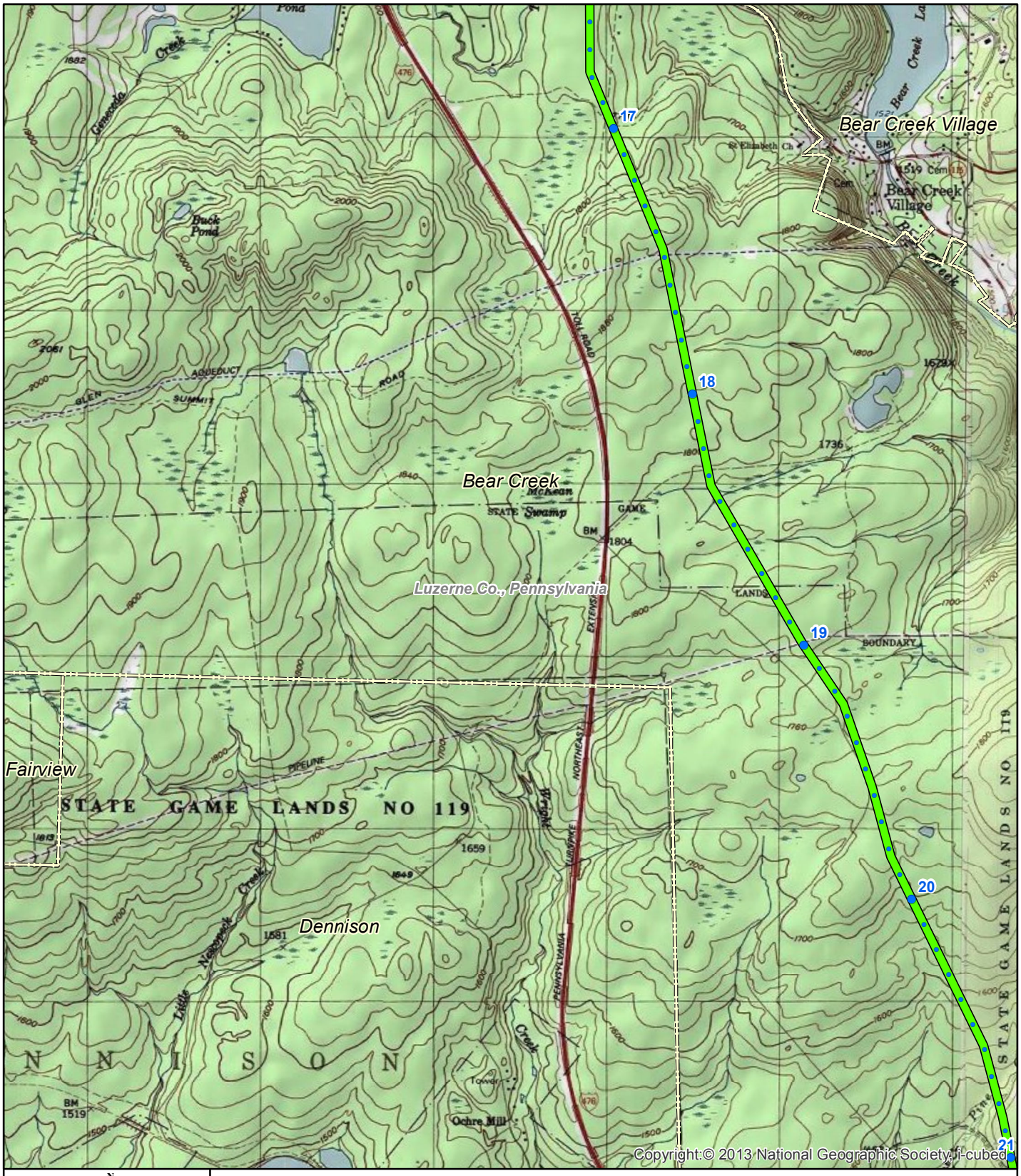
PennEast Pipeline Project
USGS Topographic Quadrangle Map



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: Wilkes-Barre East Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 6 of 36



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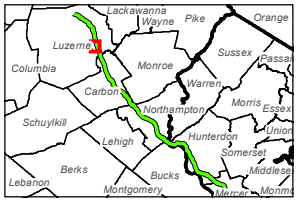
Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

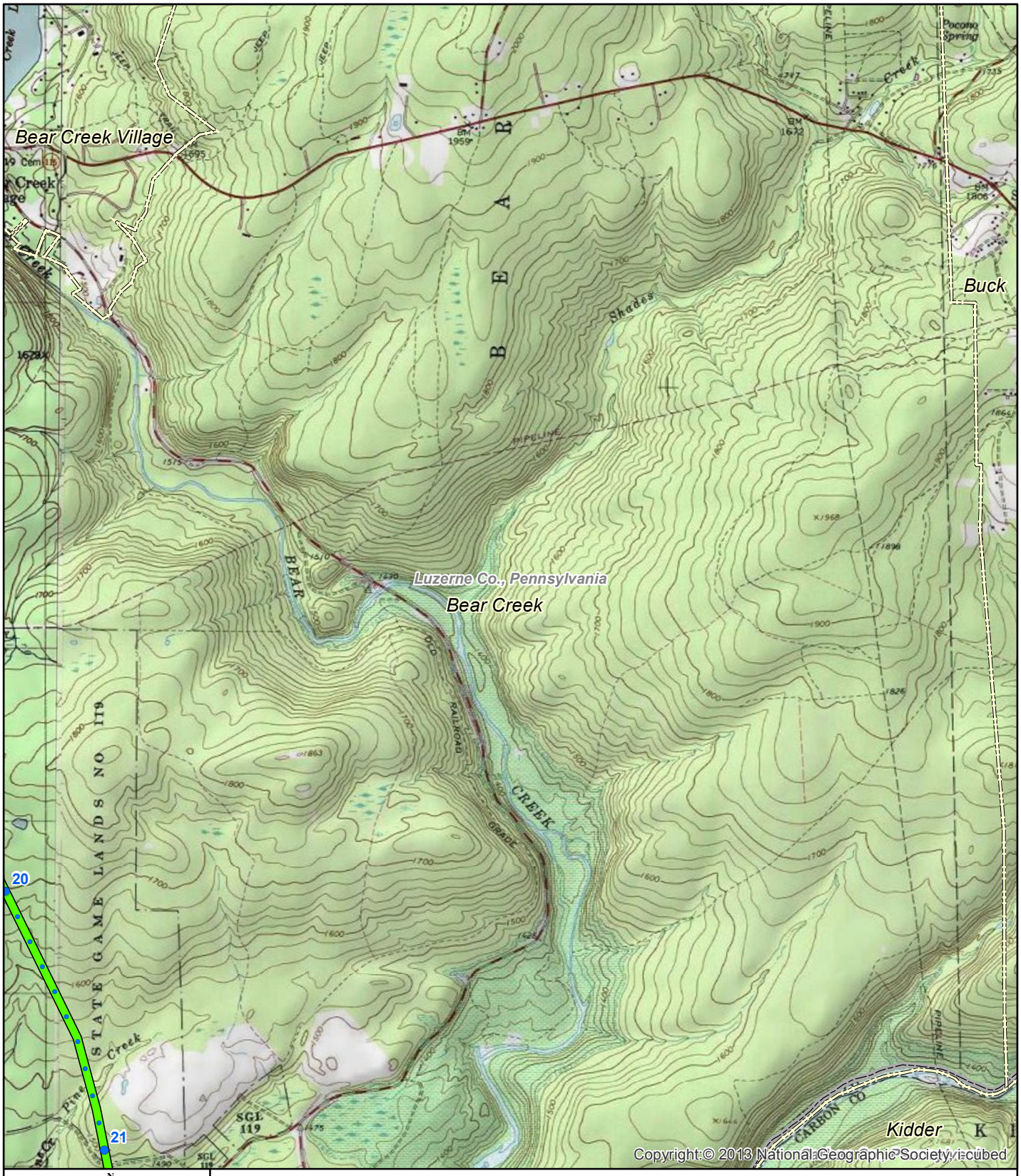
PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Wilkes-Barre East Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 7 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC



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Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

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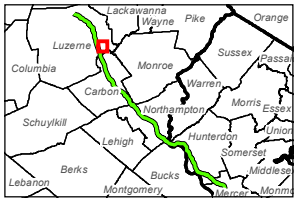
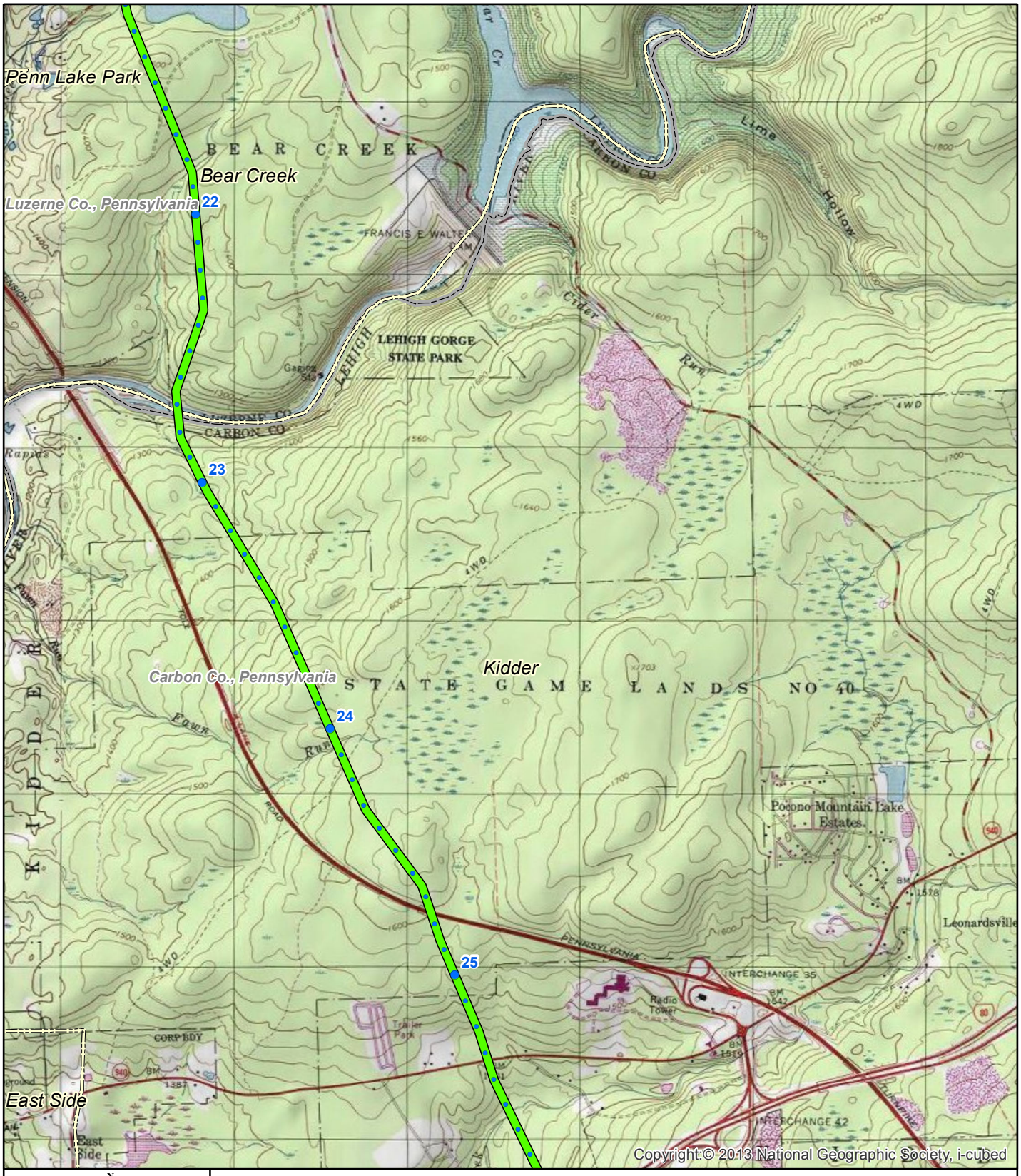
PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Pleasant View Summit Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 8 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC



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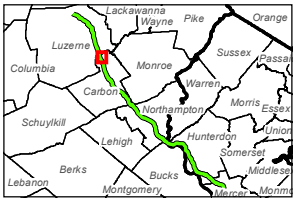
Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

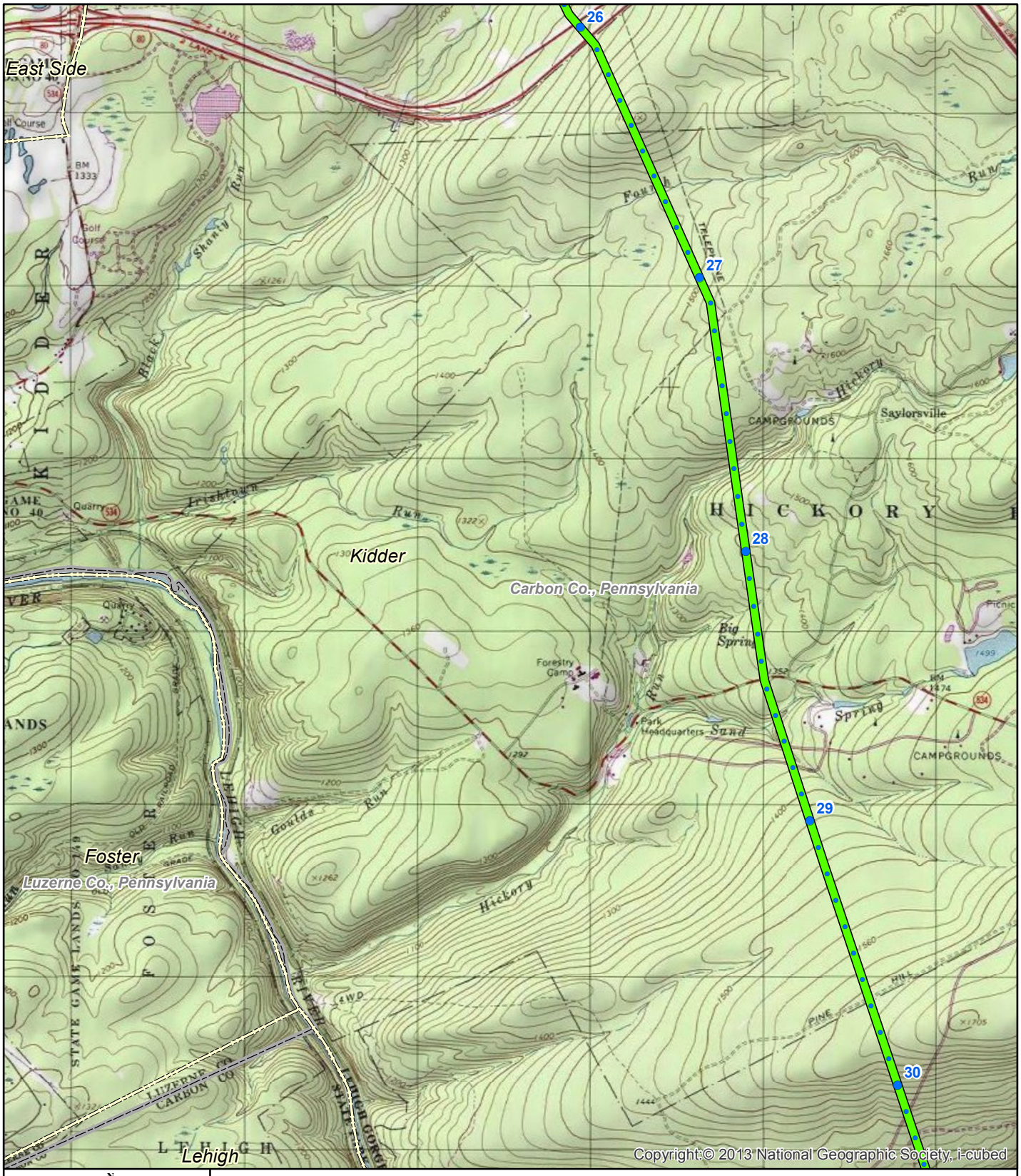
PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Hickory Run Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 9 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC



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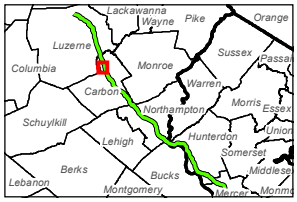
Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Hickory Run Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 10 of 36



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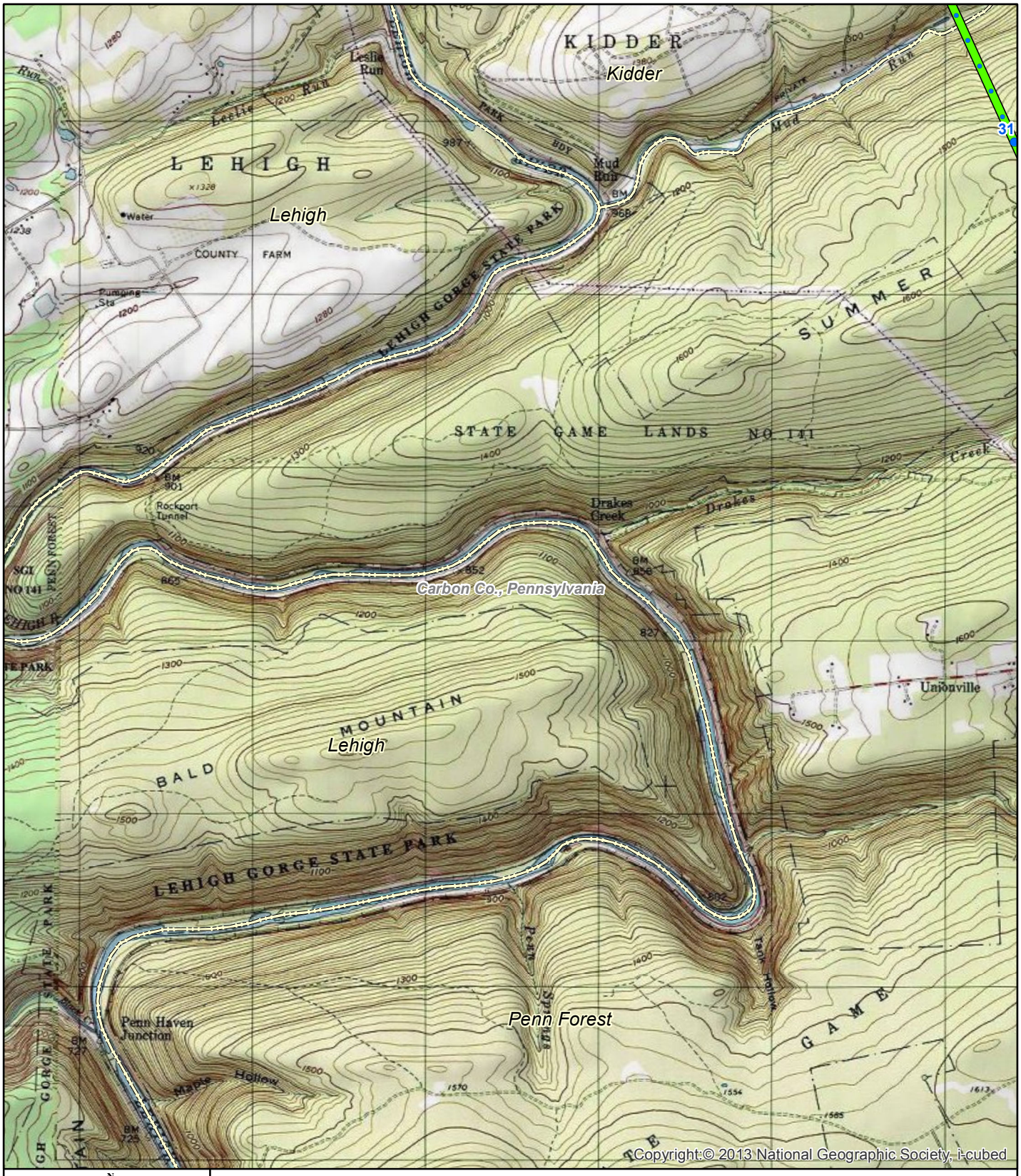

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Reference: USGS Topographic Quadrangle

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Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

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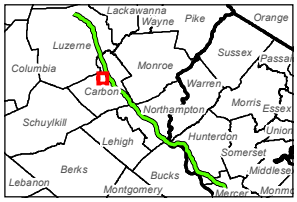
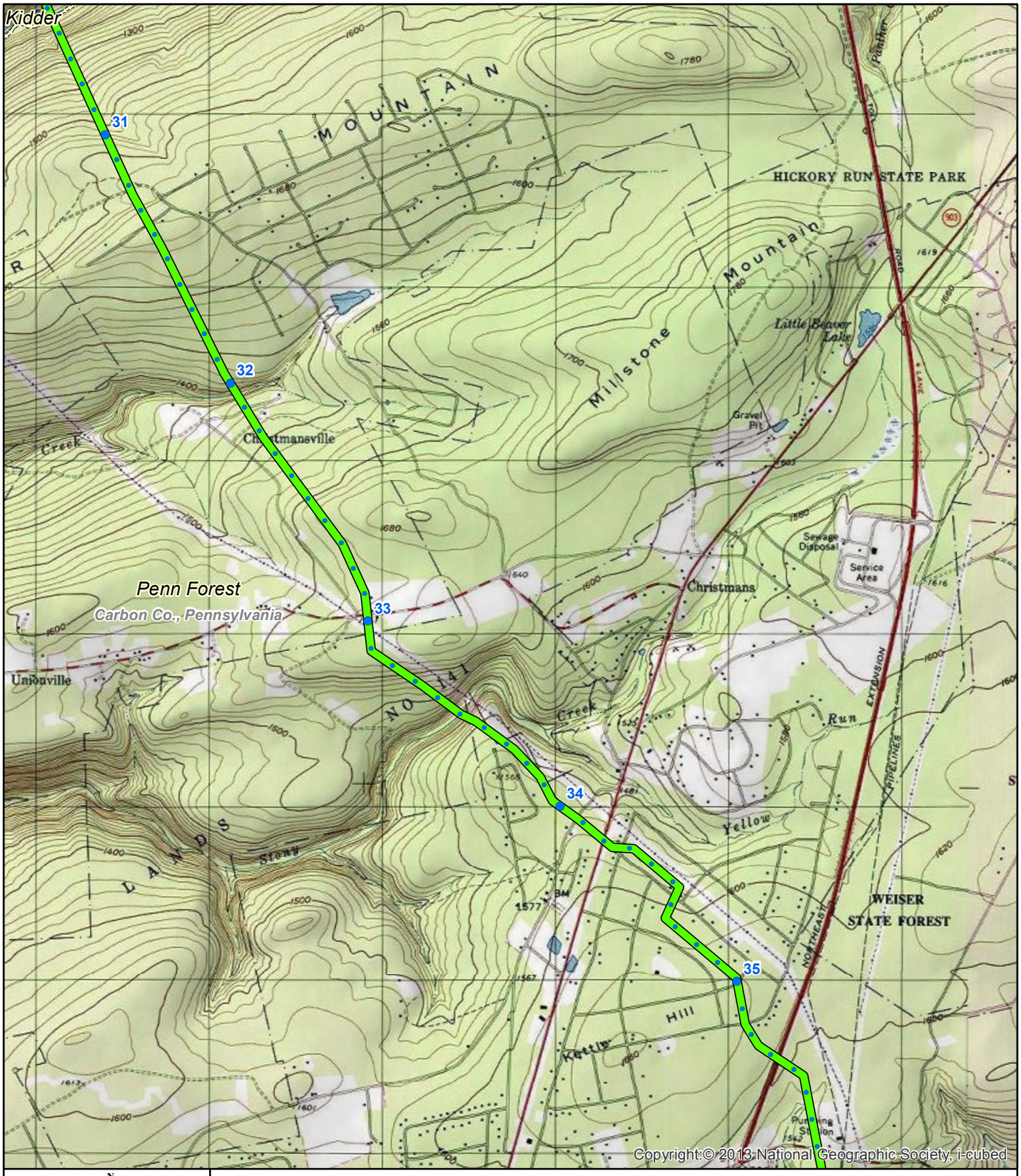
PennEast Pipeline Project
USGS Topographic Quadrangle Map



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: Christmans Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 11 of 36



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Reference: USGS Topographic Quadrangle

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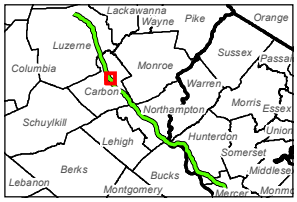
Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

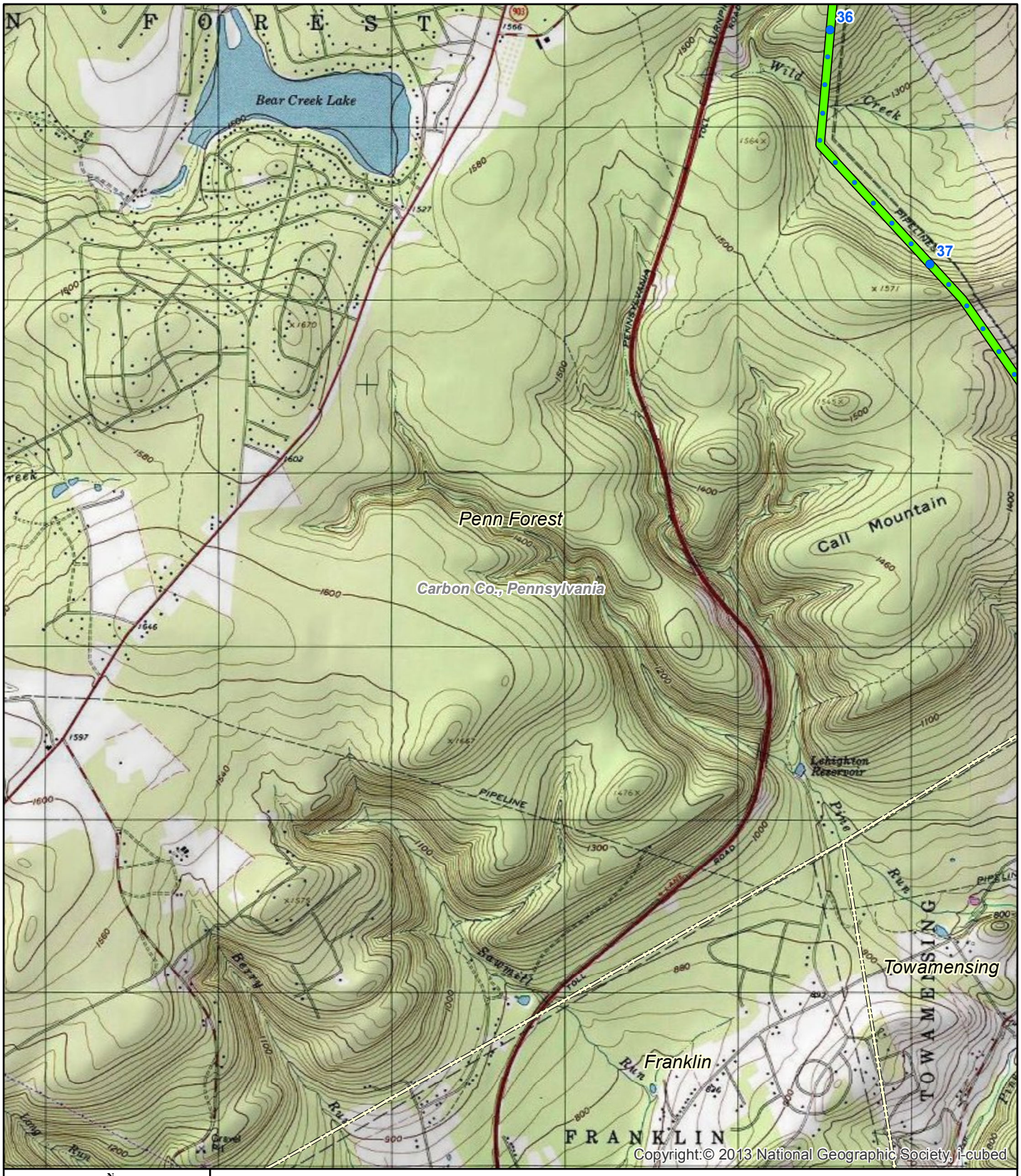
PennEast Pipeline Project
USGS Topographic Quadrangle Map



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: Christmans Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 12 of 36



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Reference: USGS Topographic Quadrangle

Legend

Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Christmans Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
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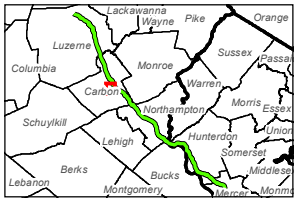

PennEast PIPELINE

PennEast Pipeline Company, LLC

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Reference: USGS Topographic Quadrangle

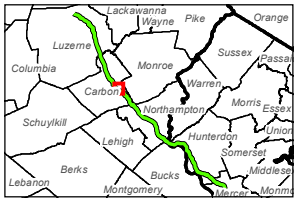
Legend

Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

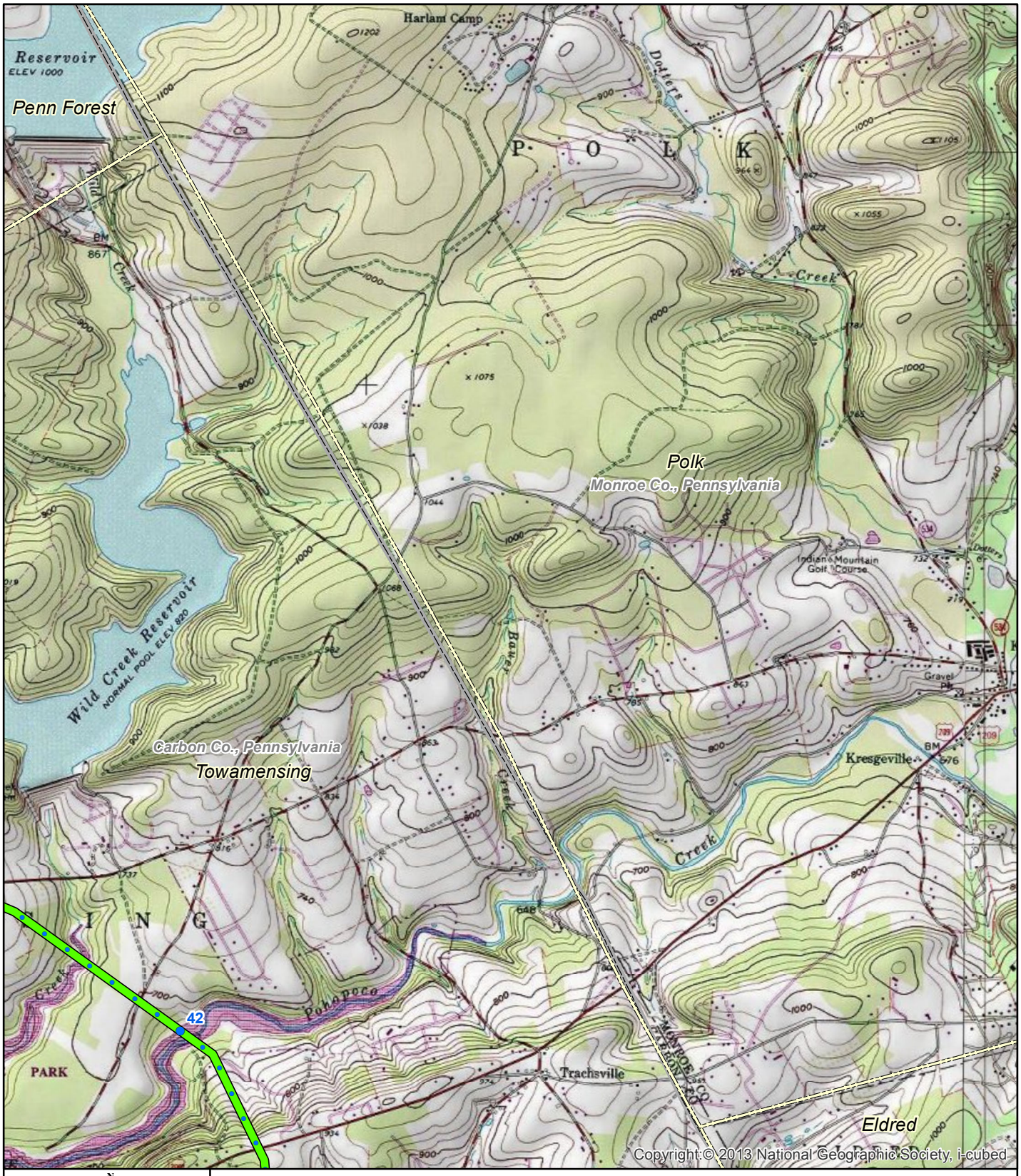
PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Pohopoco Mountain Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 14 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC



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Reference: USGS Topographic Quadrangle

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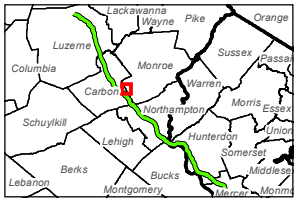
Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Pohopoco Mountain Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 15 of 36



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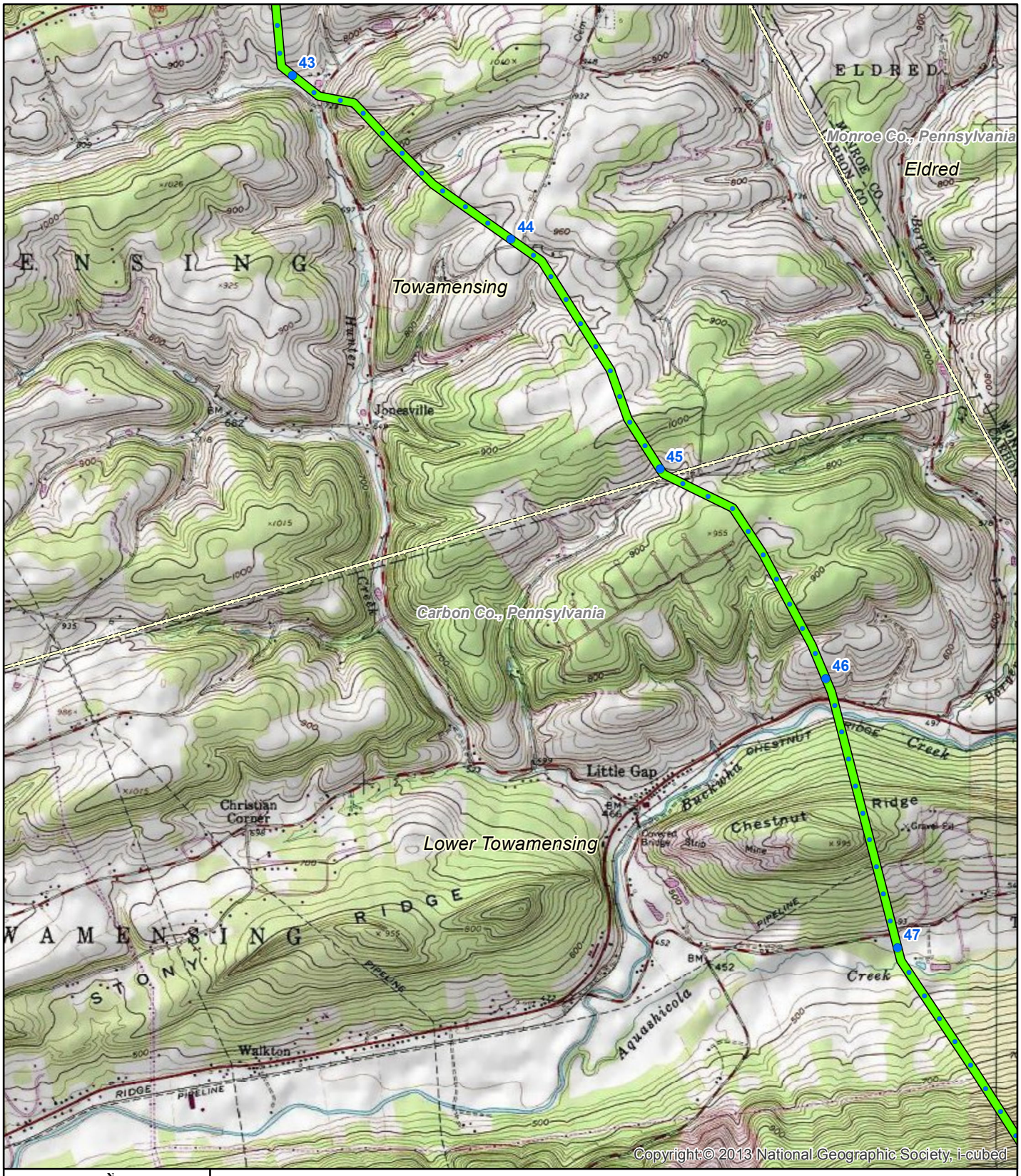

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Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

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PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Palmerton Quadrangle			REV.:
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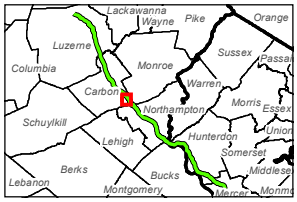

PennEast PIPELINE

PennEast Pipeline Company, LLC

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Reference: USGS Topographic Quadrangle

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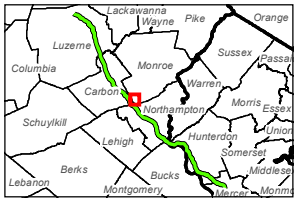
Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Kunkletown Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 17 of 36



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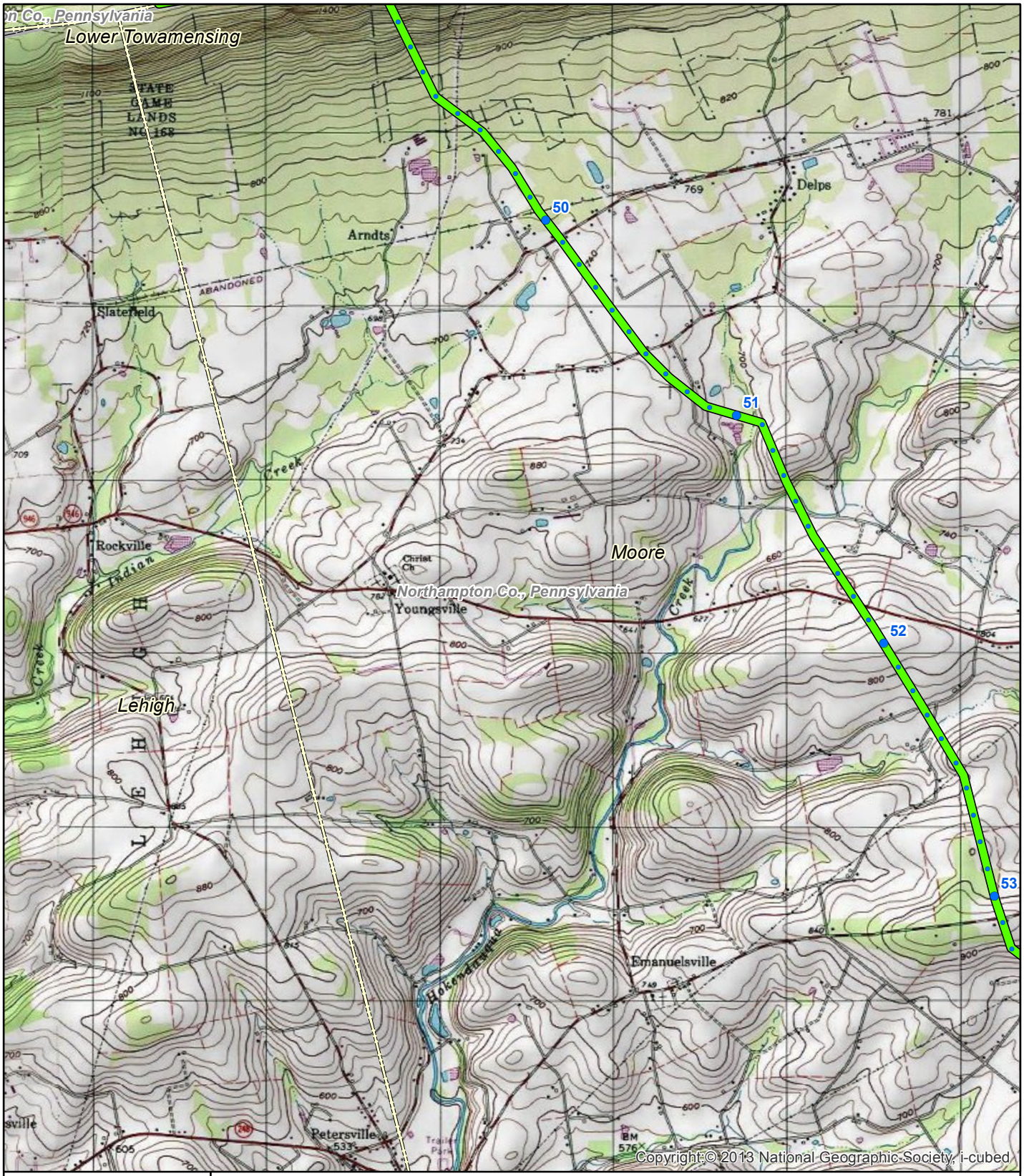

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Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

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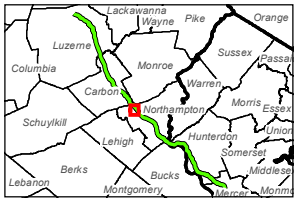
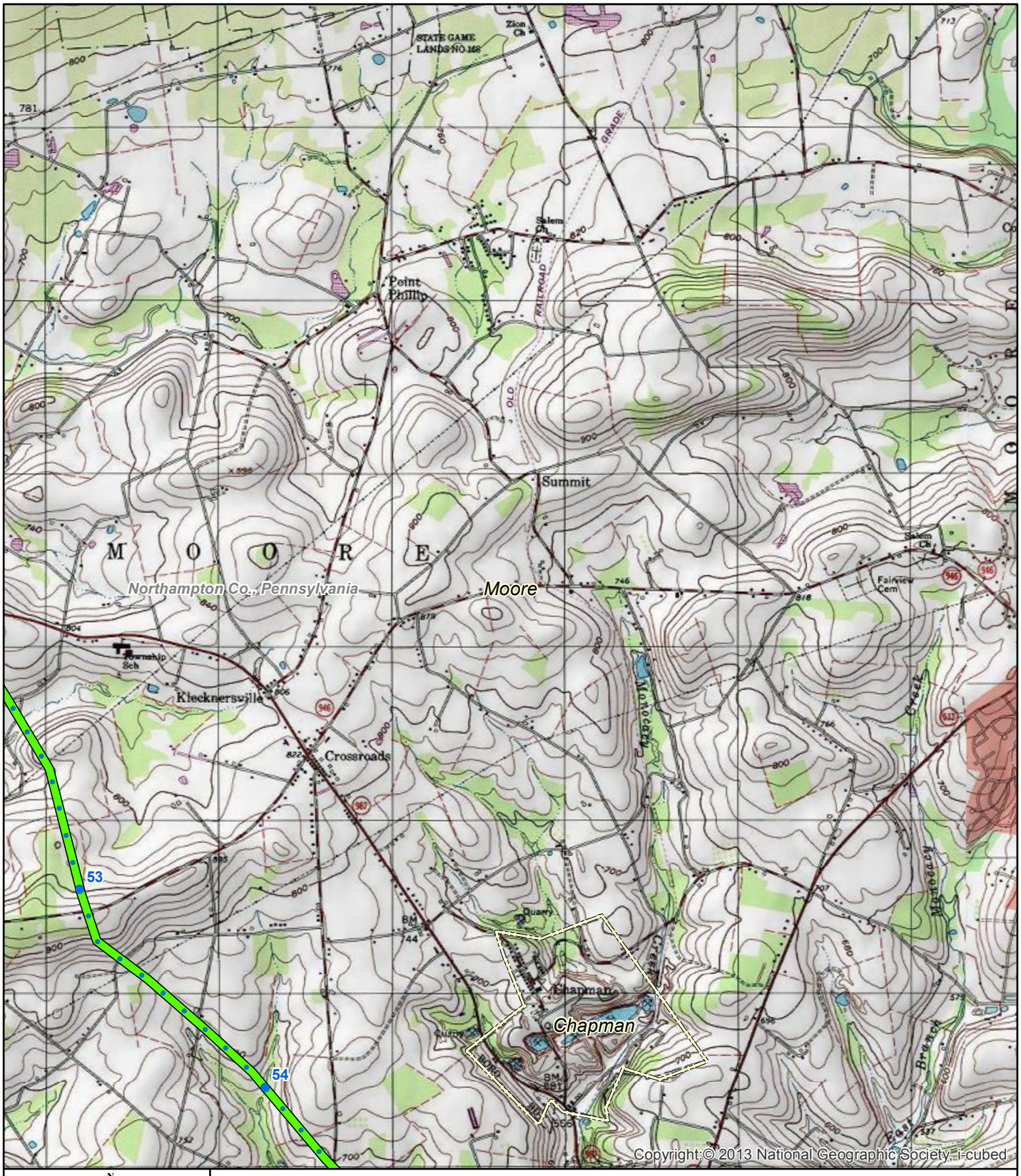
PennEast Pipeline Project
USGS Topographic Quadrangle Map



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: Kunkletown Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 18 of 36



N
W E
S

0 800 1,600 3,200 Feet

Reference: USGS Topographic Quadrangle

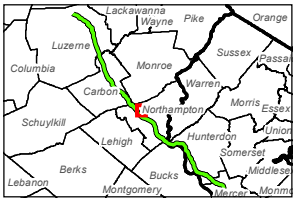
Legend

Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

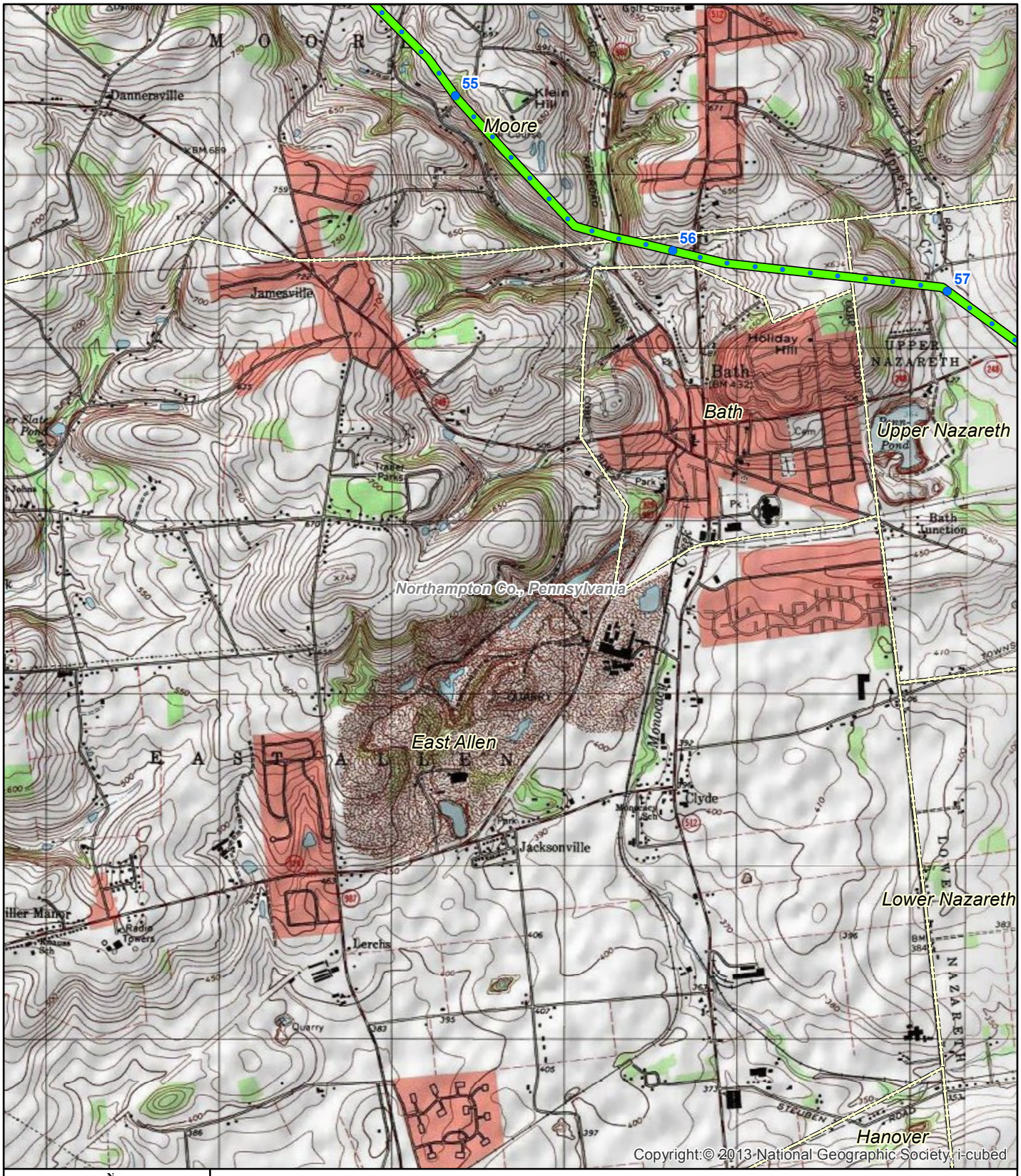
PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Kunkletown Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 19 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC



N
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0 800 1,600 3,200 Feet

Reference: USGS Topographic Quadrangle

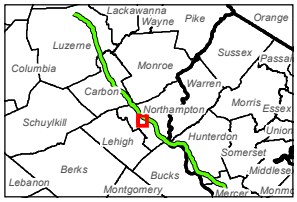
Legend

Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

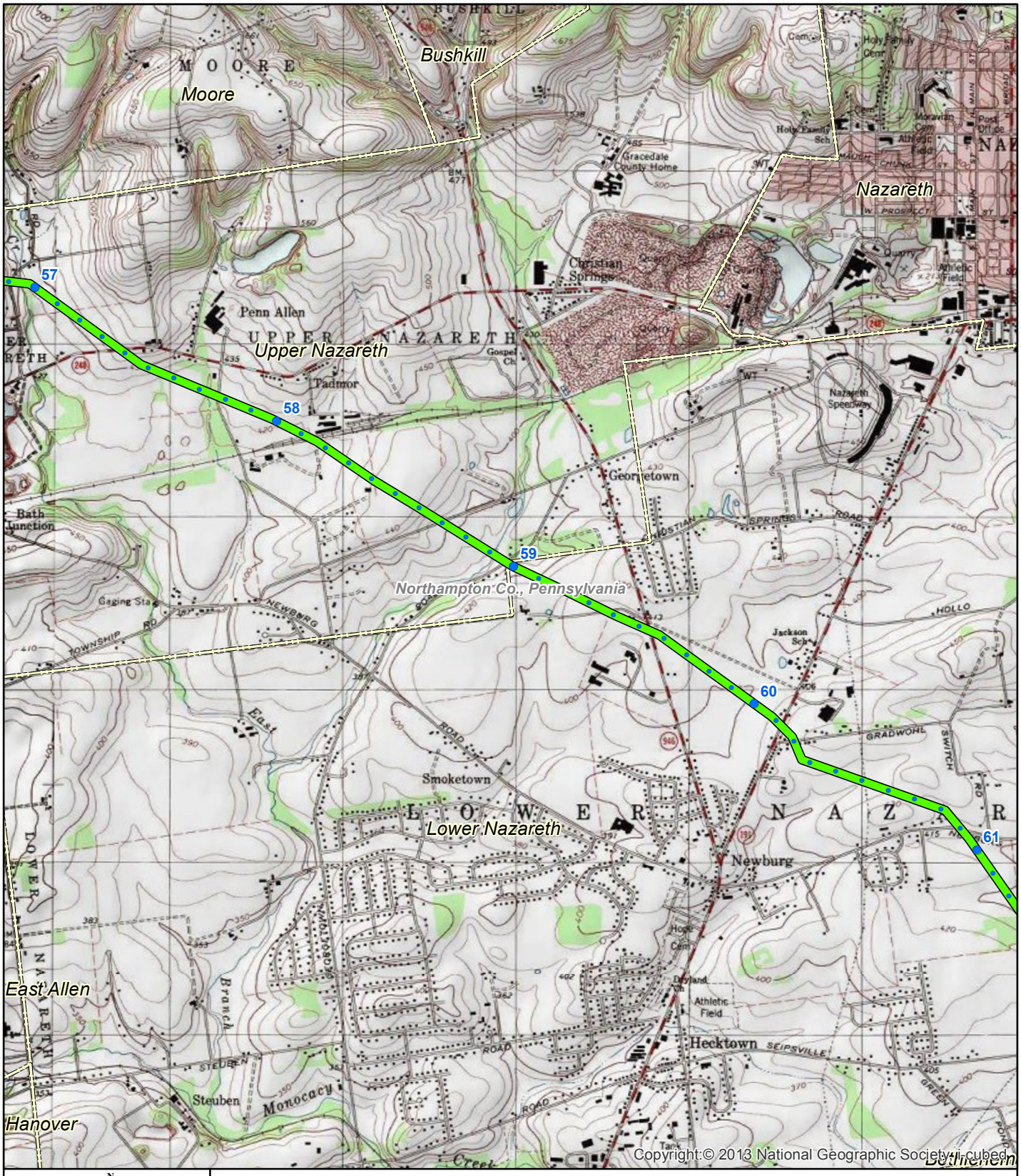
PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Catasauqua Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 20 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC



N
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0 800 1,600 3,200 Feet

Reference: USGS Topographic Quadrangle

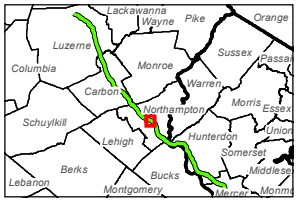
Legend

Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

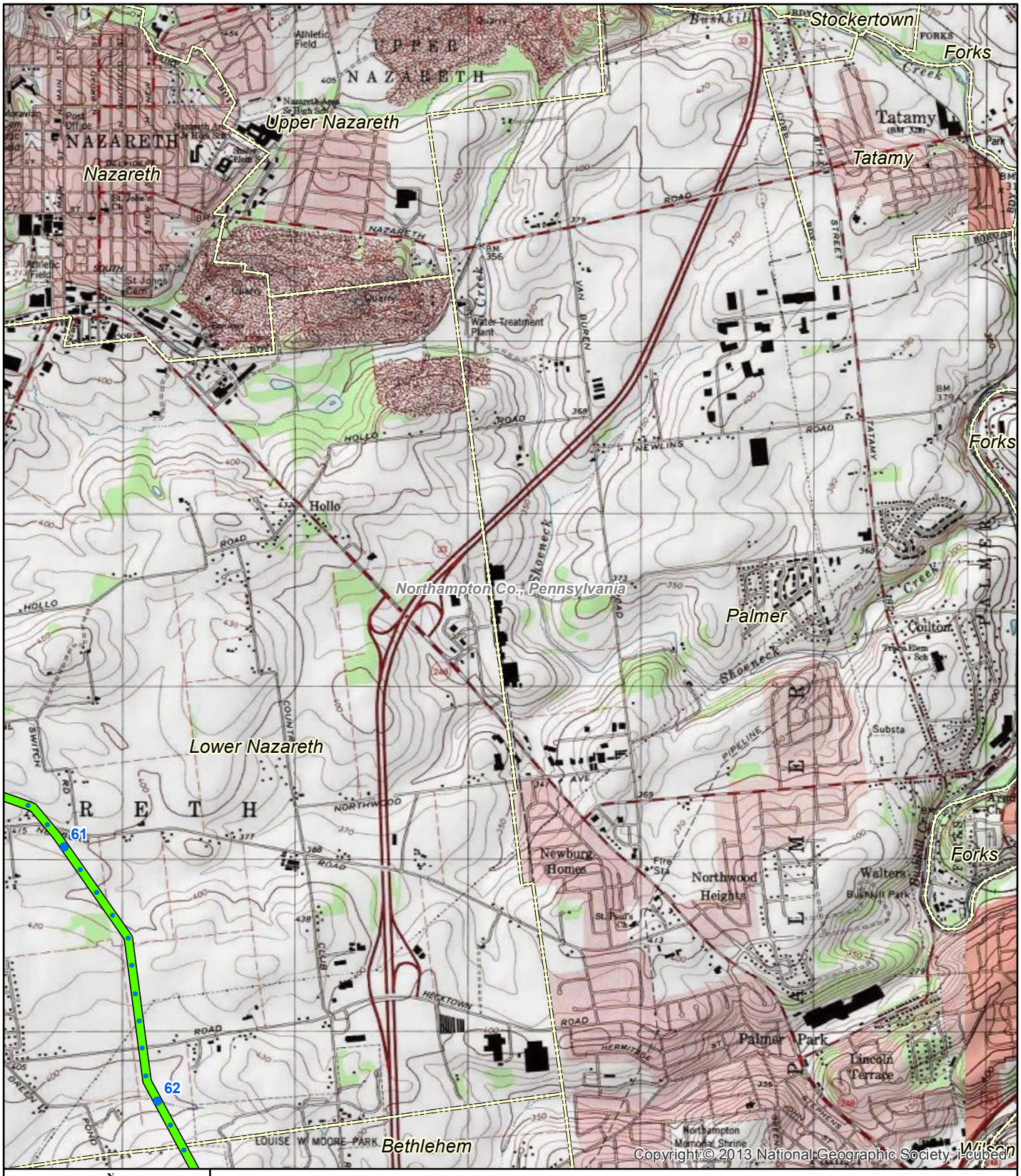
PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Nazareth Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 21 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC



N
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0 800 1,600 3,200
Feet

Reference: USGS Topographic Quadrangle

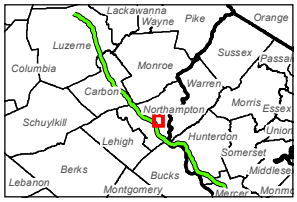
Legend

Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

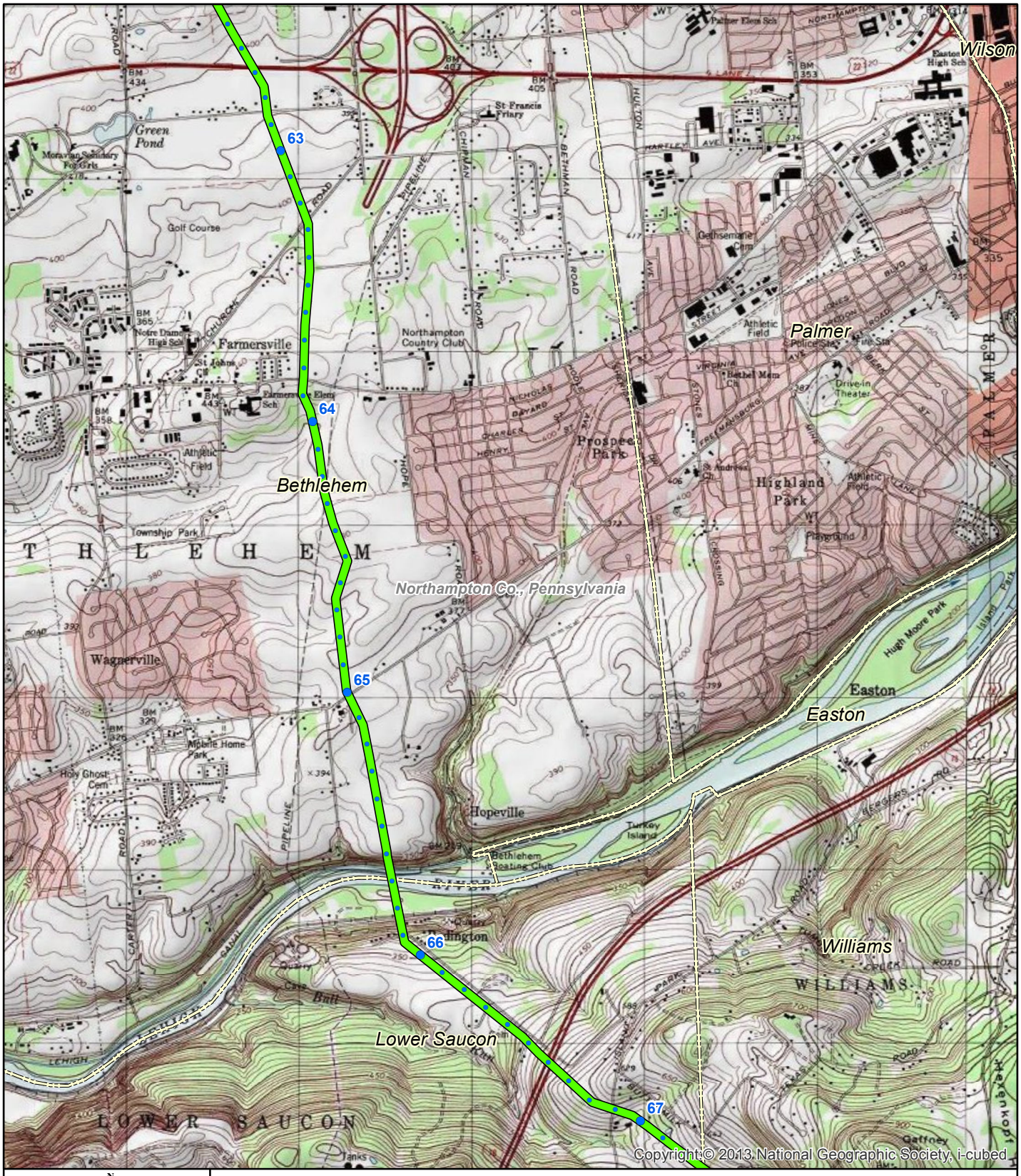
PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Nazareth Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 22 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC



N
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0 800 1,600 3,200 Feet

Reference: USGS Topographic Quadrangle

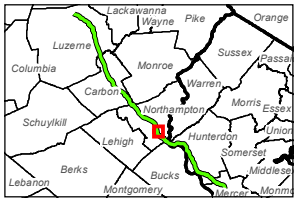
Legend

Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

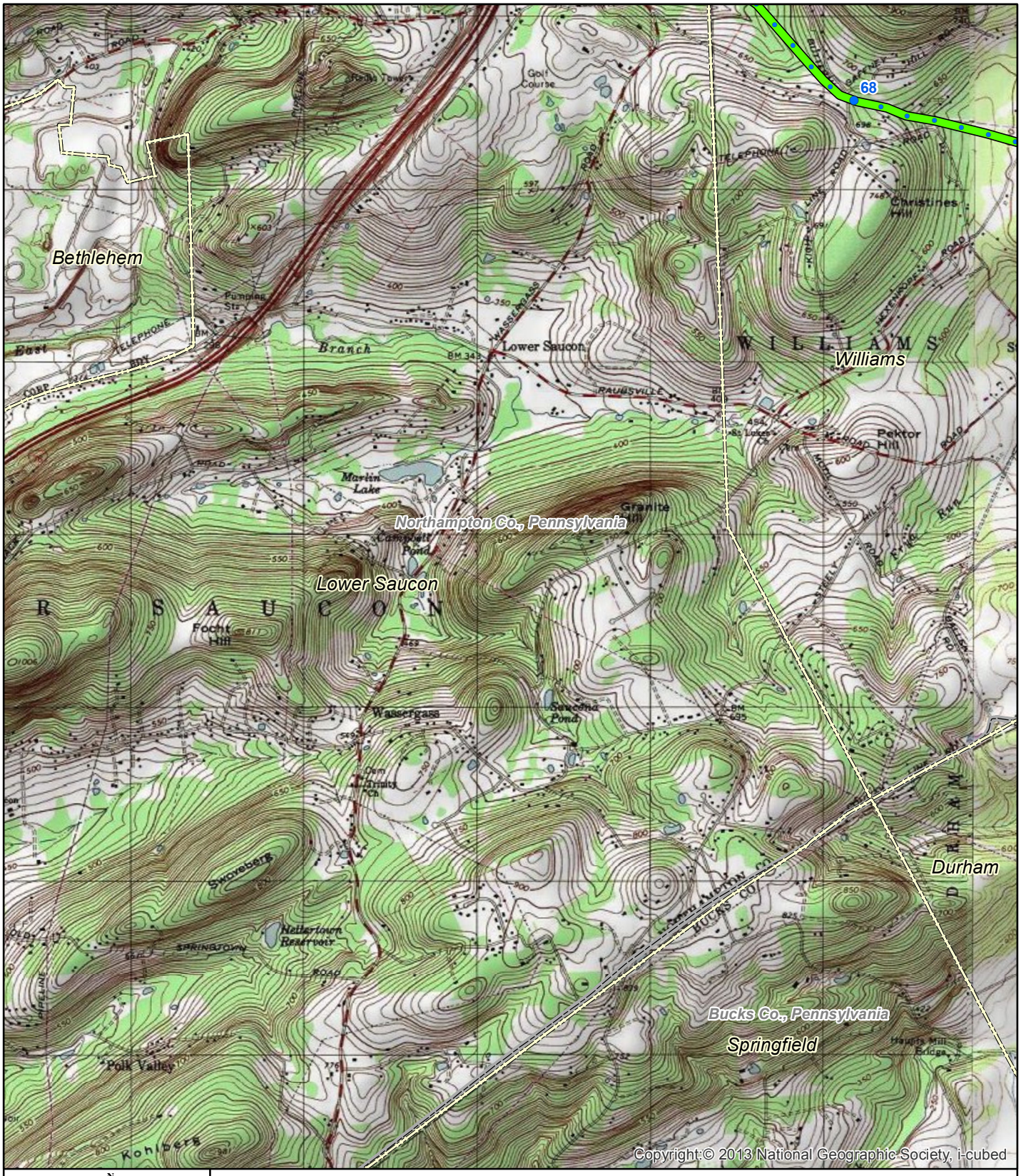
PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Nazareth Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 23 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC



N
W E
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0 800 1,600 3,200
Feet

Reference: USGS Topographic Quadrangle

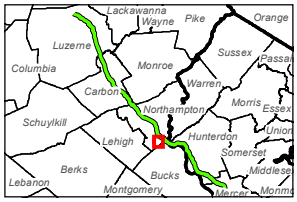
Legend

Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

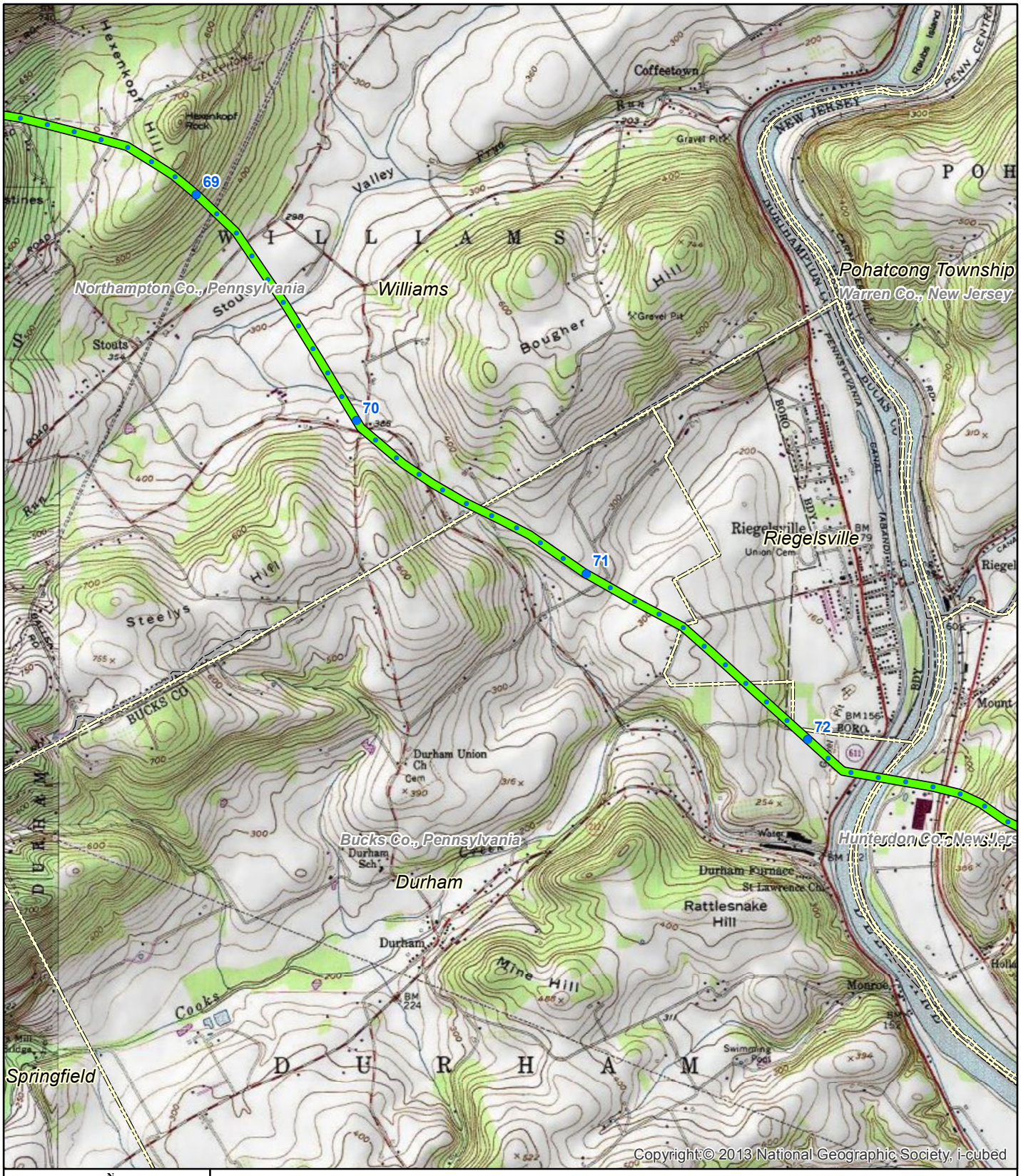
PennEast Pipeline Project
USGS Topographic Quadrangle Map

LOC: Hellertown Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 24 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC



N
W E
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0 800 1,600 3,200 Feet

Reference: USGS Topographic Quadrangle

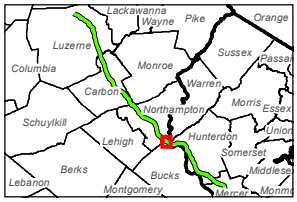
Legend

Mile Postings | PennEast Pipeline | Municipality Boundary | County Boundary

TITLE:

PennEast Pipeline Project
USGS Topographic Quadrangle Map

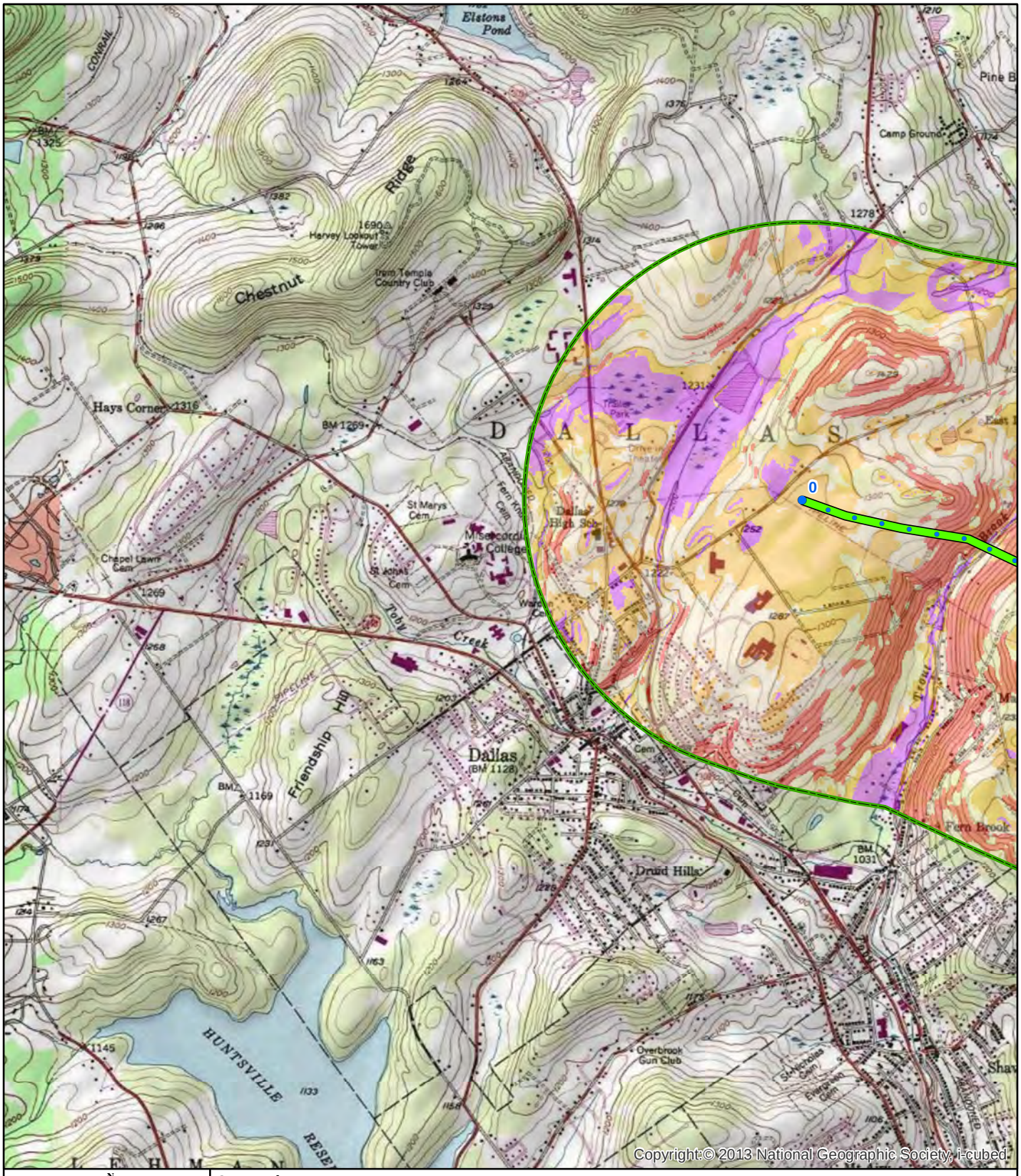
LOC: Riegelsville Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/12/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 25 of 36



PennEast PIPELINE

PennEast Pipeline Company, LLC

ATTACHMENT B: Project Maps with Previously-Recorded Archaeological Sites and Archaeological Sensitivity Model Overlay



N
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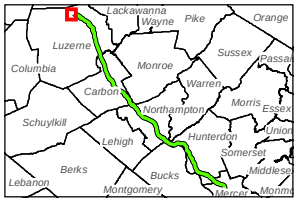
0 800 1,600 3,200
Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

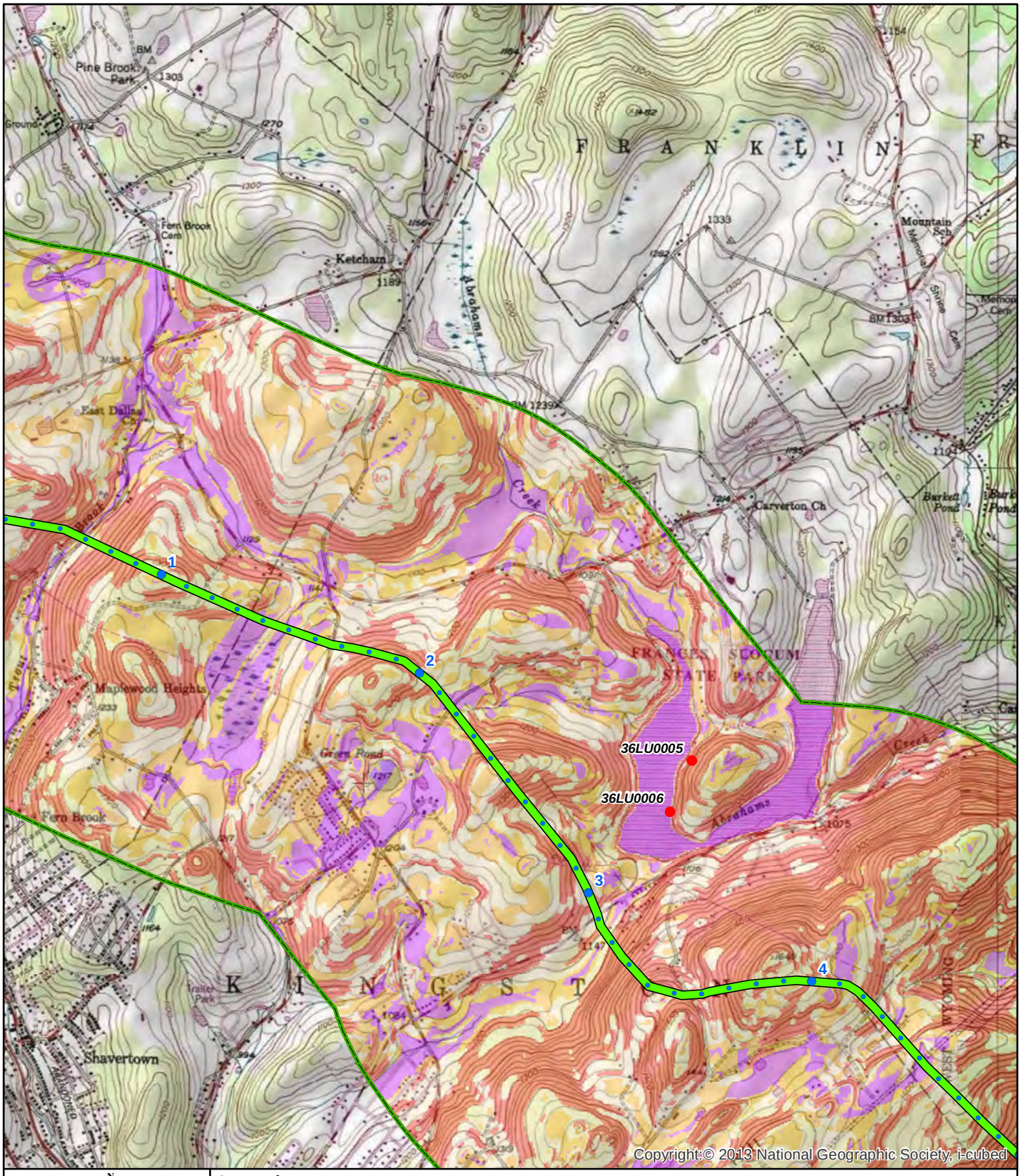
PennEast Pipeline Project
Pennsylvania Archaeological Resources



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: USGS Kingston Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 1 of 27



N
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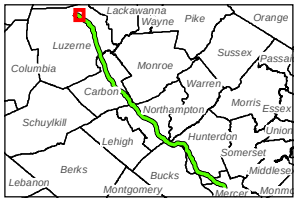
0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

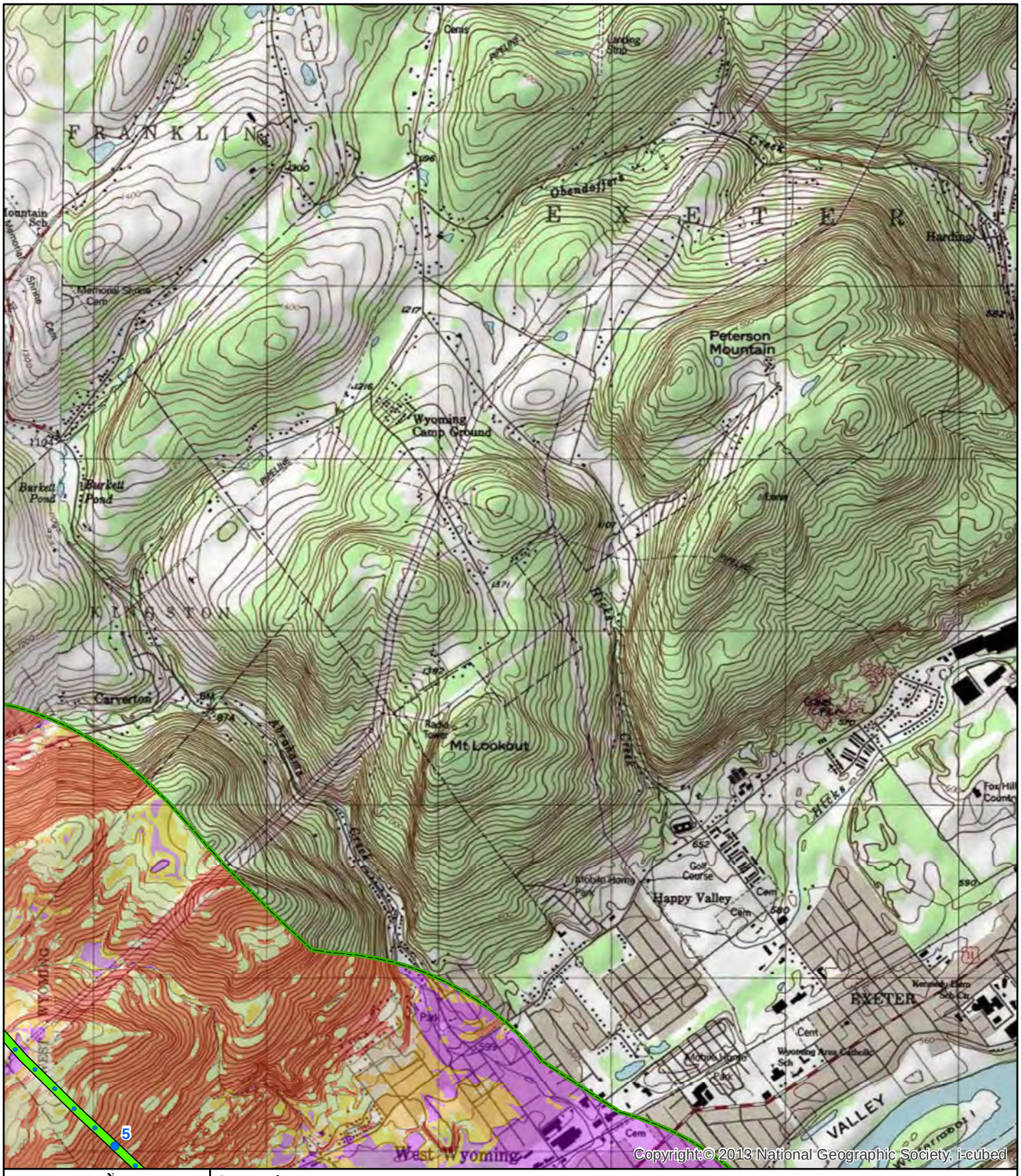
PennEast Pipeline Project
Pennsylvania Archaeological Resources



LOC: USGS Kingston Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 2 of 27

PennEast PIPELINE

PennEast Pipeline Company, LLC



N
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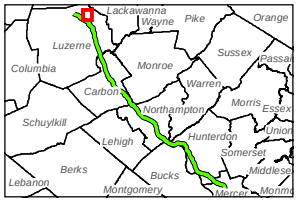
0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

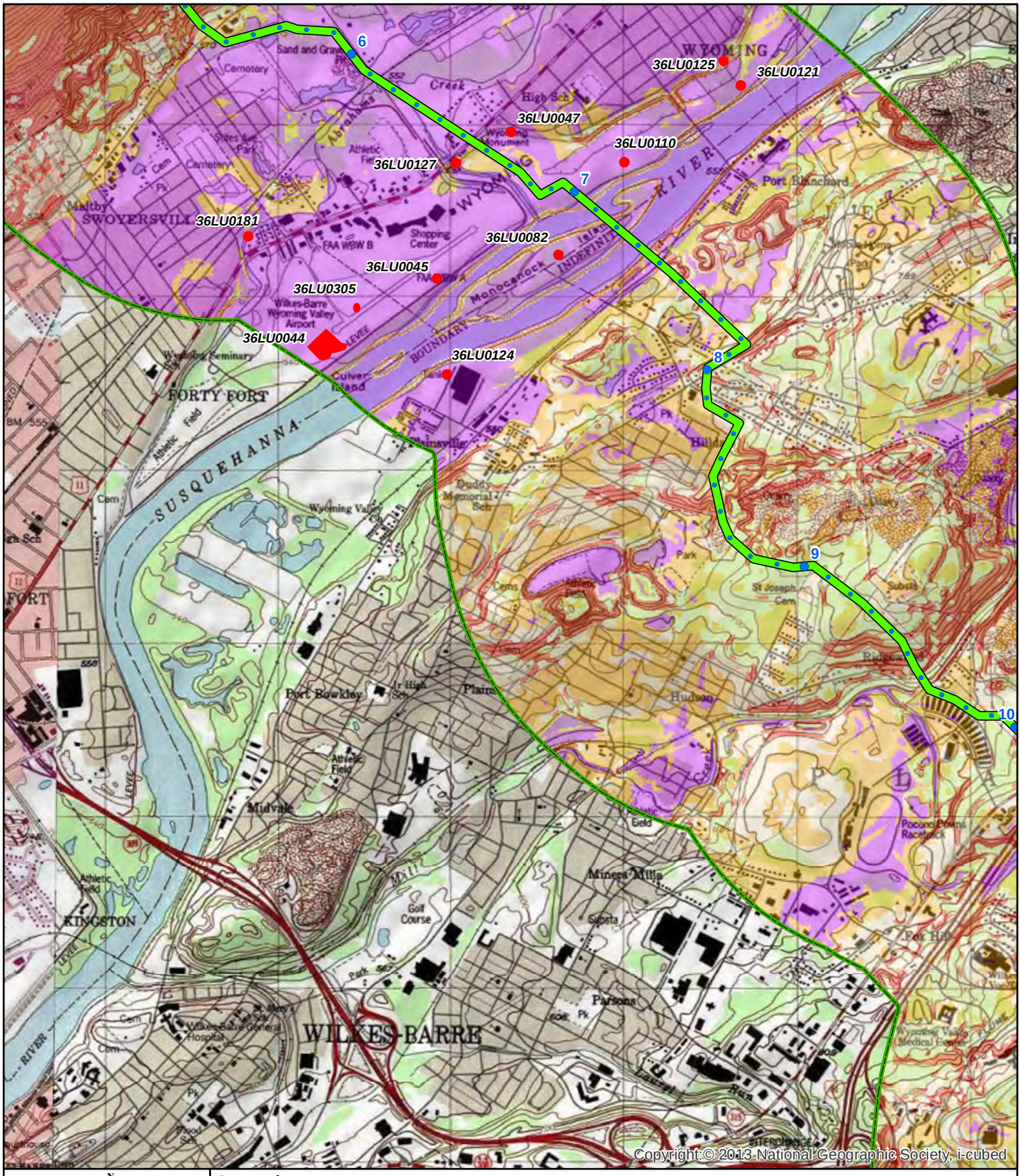
PennEast Pipeline Project
Pennsylvania Archaeological Resources



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: USGS Pittston Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 3 of 27



N
W E
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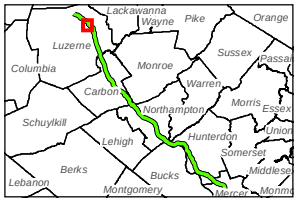
0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

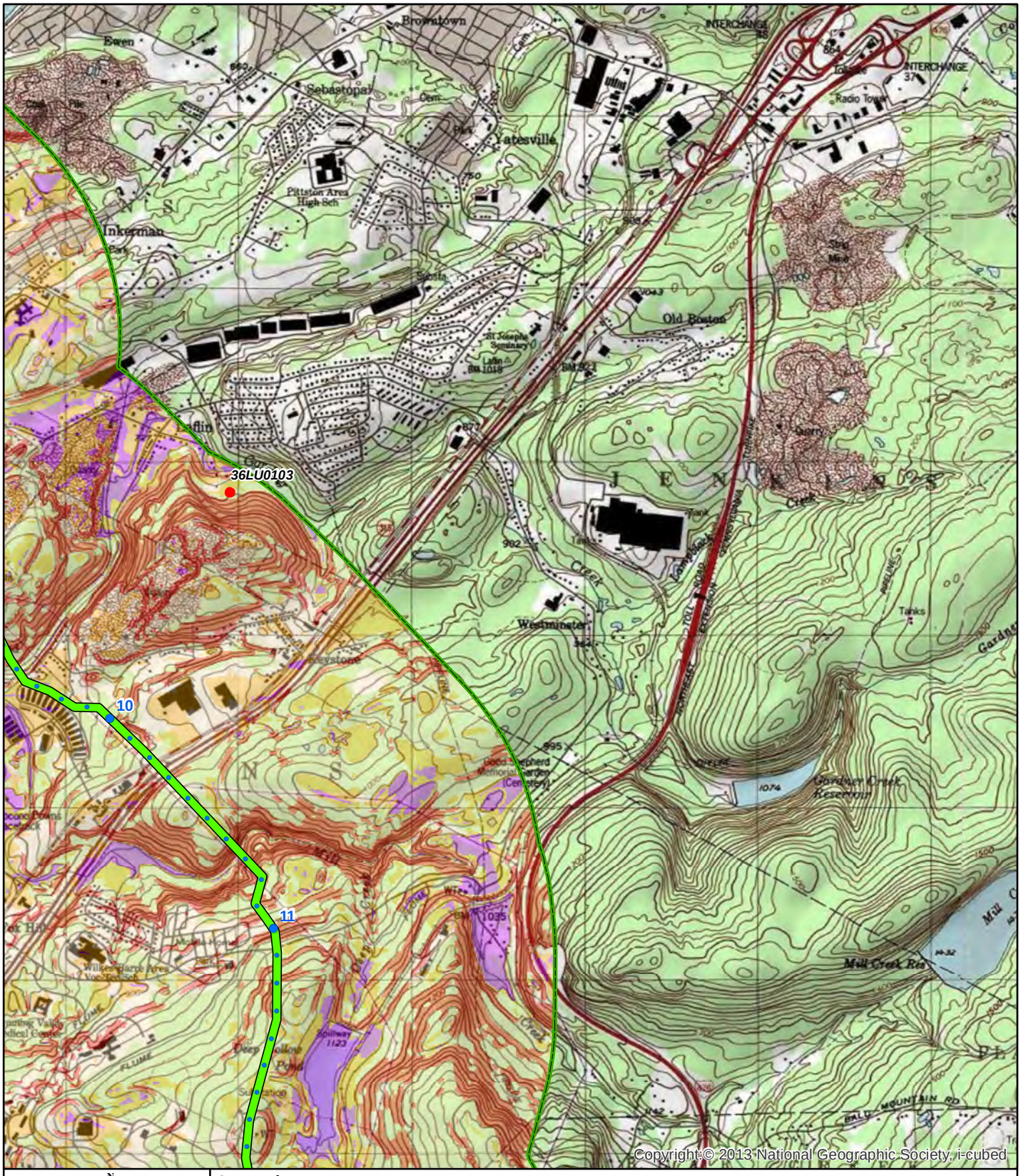
PennEast Pipeline Project
Pennsylvania Archaeological Resources



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: USGS Pittston Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 4 of 27



N
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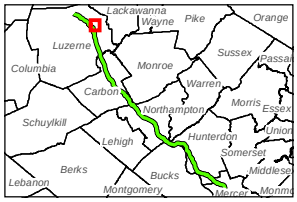
0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

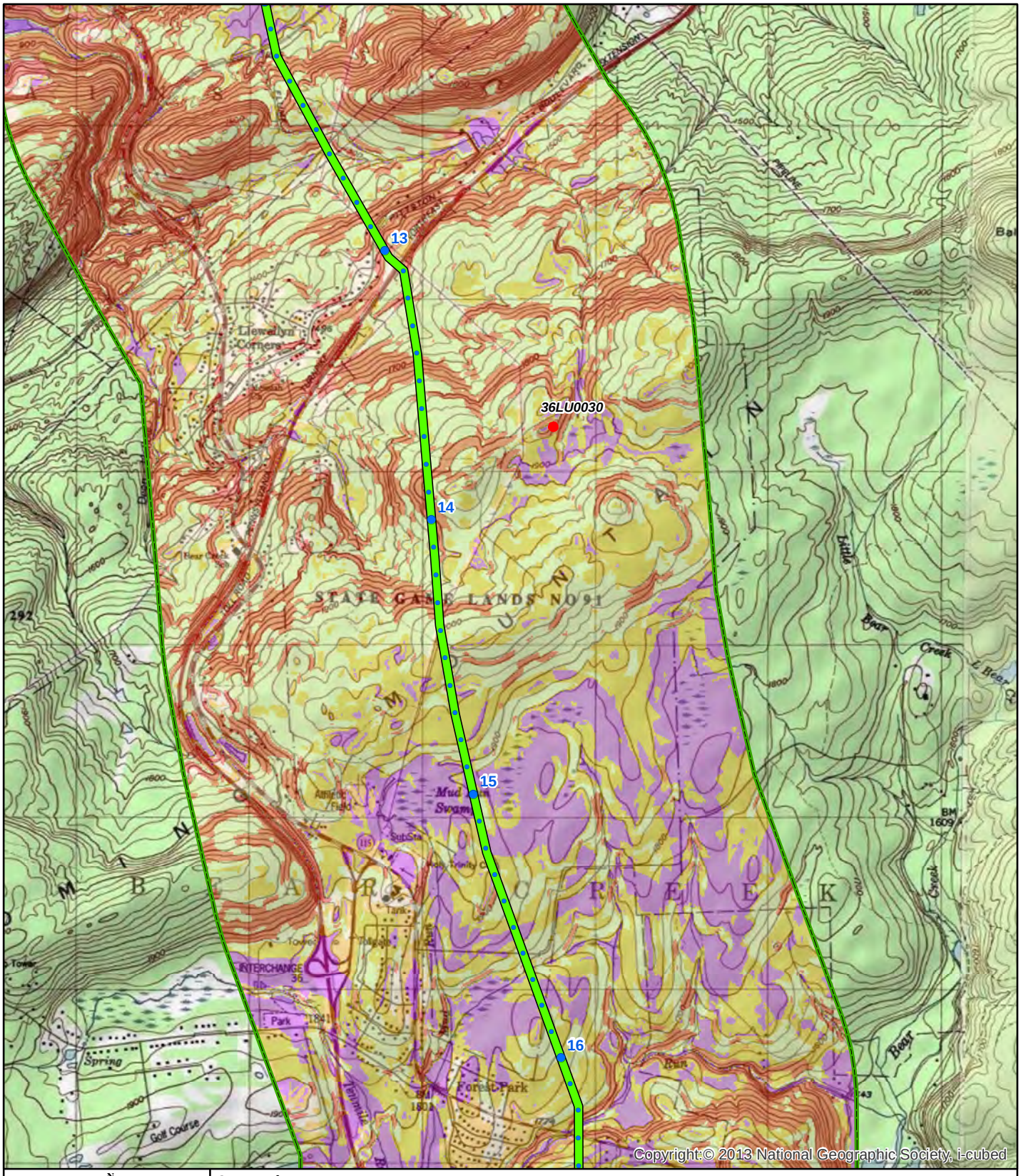
PennEast Pipeline Project
Pennsylvania Archaeological Resources



LOC: USGS Pittston Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 5 of 27

PennEast PIPELINE

PennEast Pipeline Company, LLC



N
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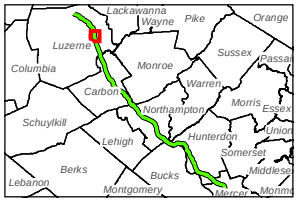
0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

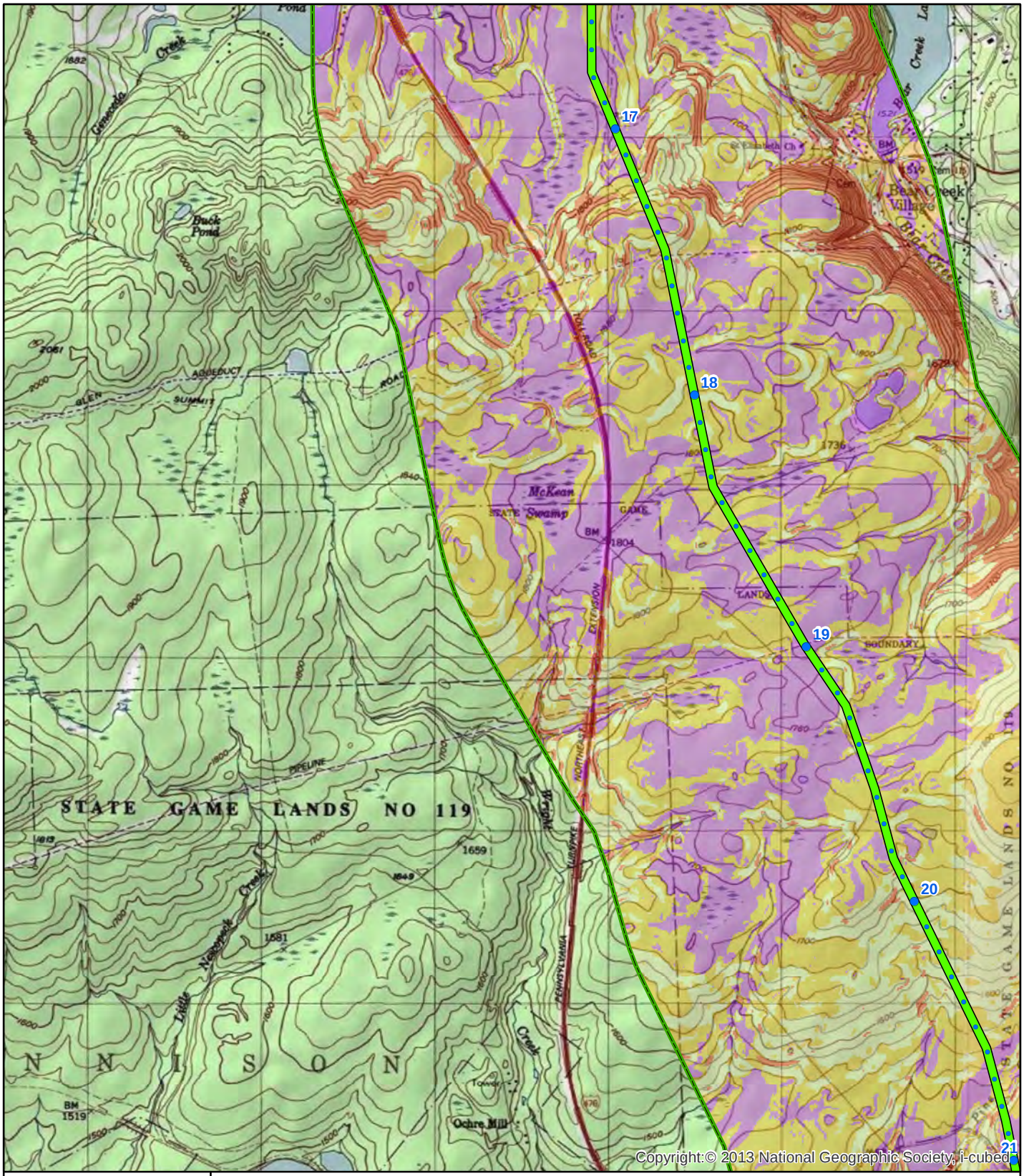
PennEast Pipeline Project
Pennsylvania Archaeological Resources



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: USGS Wilkes-Barre East Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 6 of 27



N
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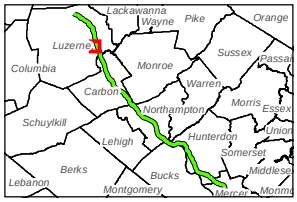
0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

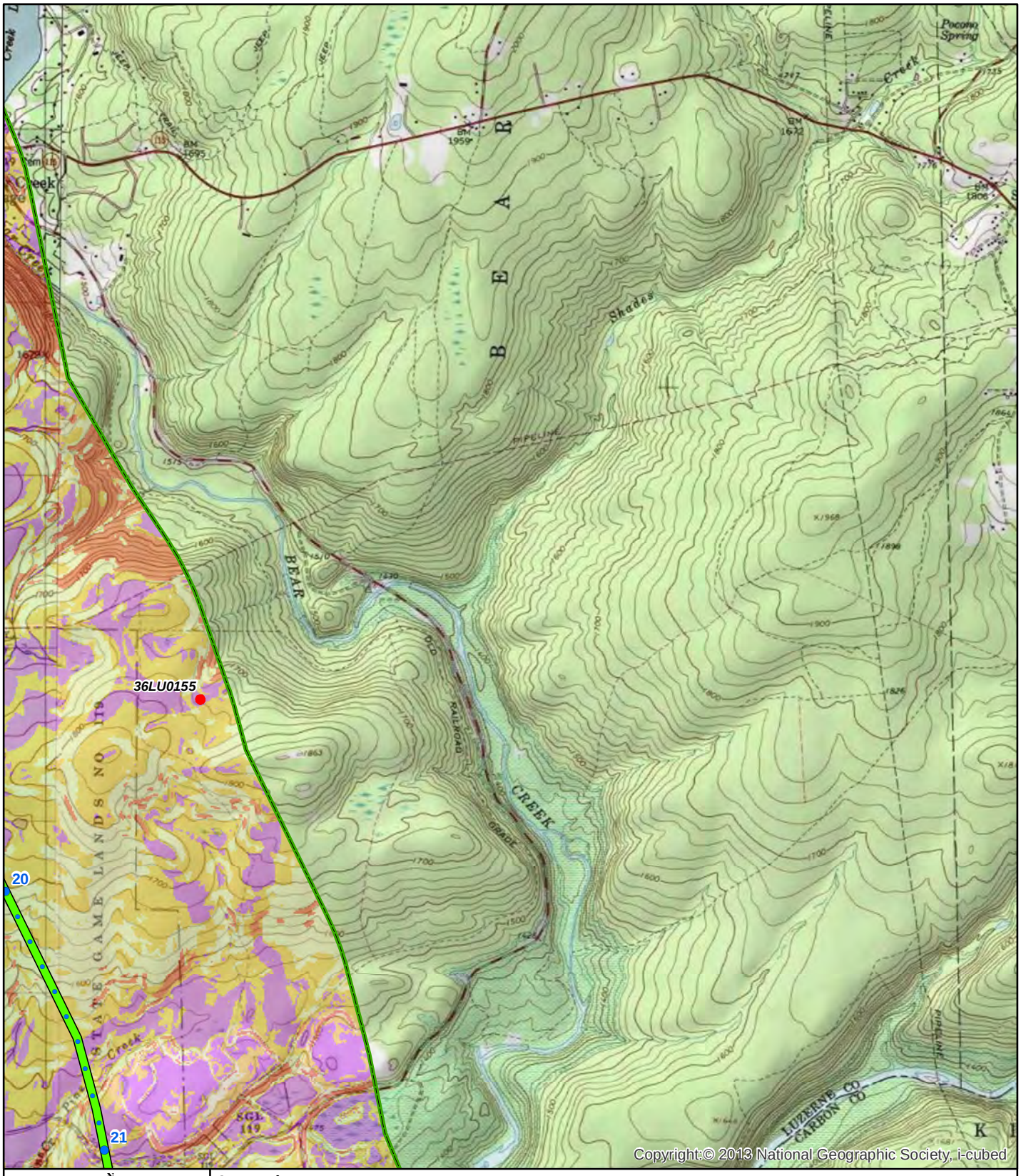
PennEast Pipeline Project
Pennsylvania Archaeological Resources



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: USGS Wilkes-Barre East Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 7 of 27



N
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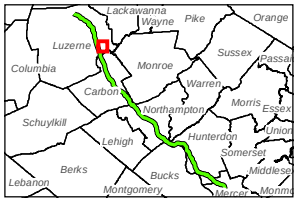
0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

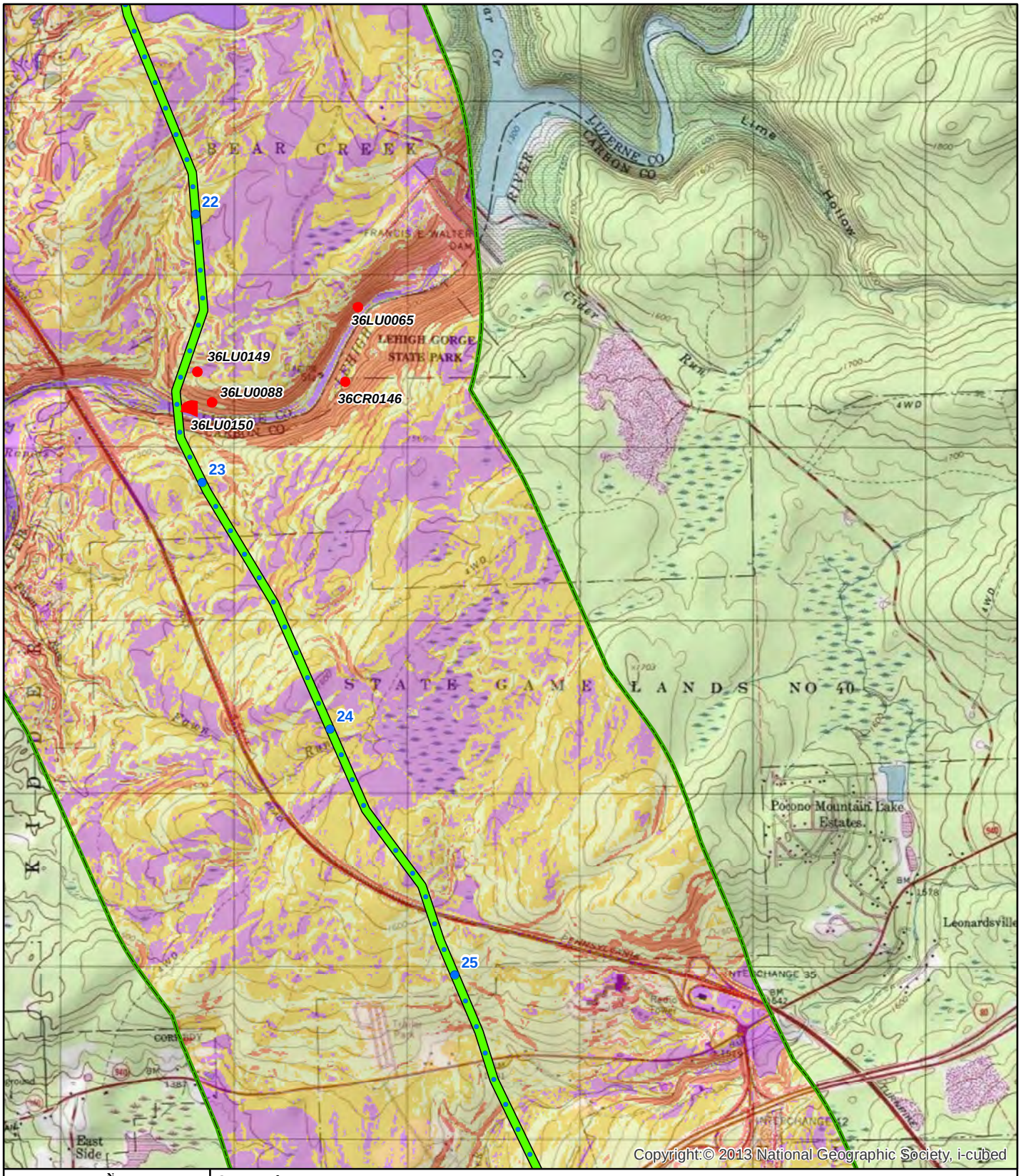
PennEast Pipeline Project
Pennsylvania Archaeological Resources



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: USGS Pleasant View Summit Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 8 of 27



N
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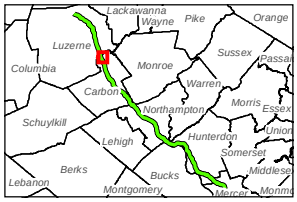
0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

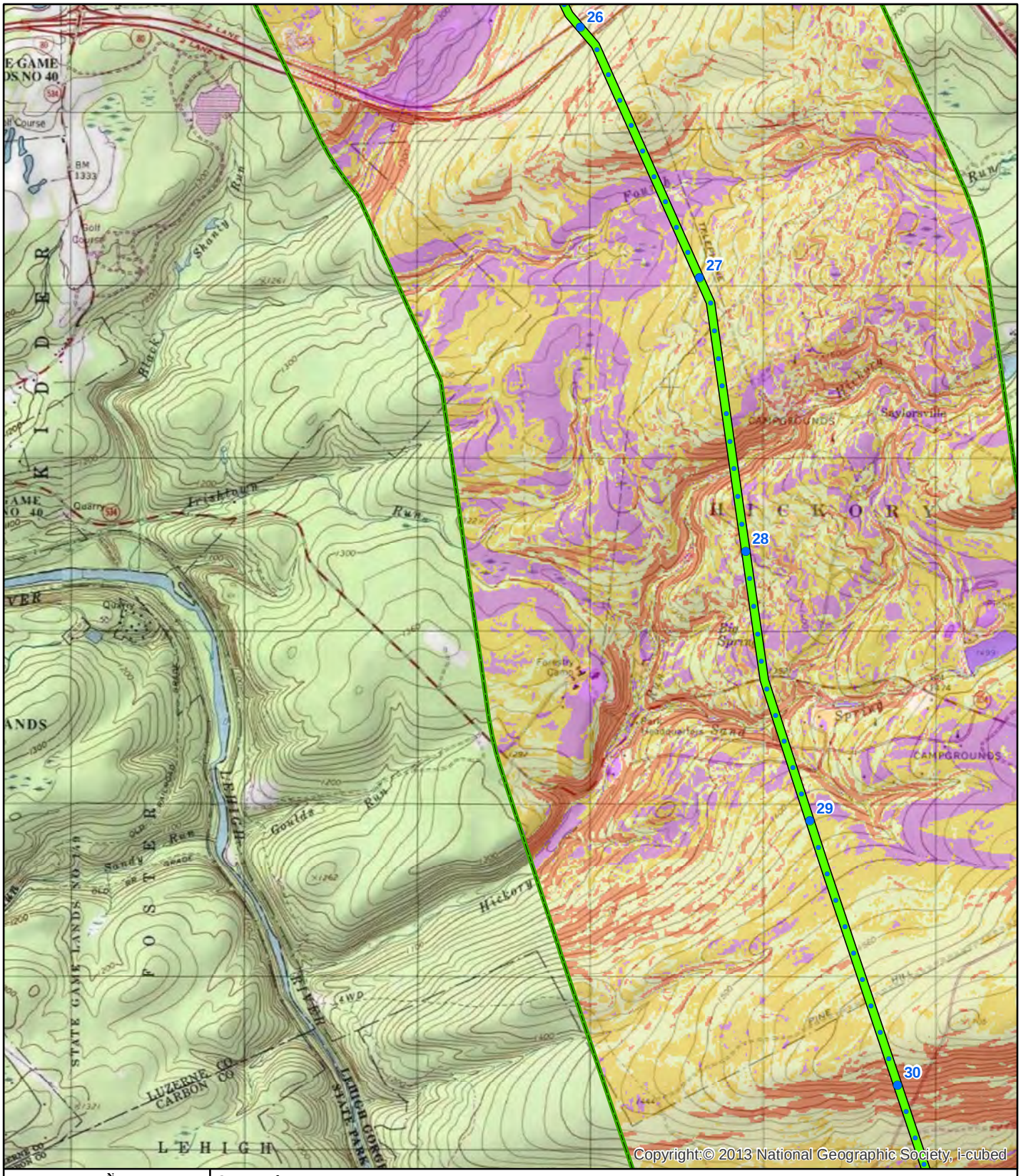
PennEast Pipeline Project
Pennsylvania Archaeological Resources



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: USGS Hickory Run Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 9 of 27



N
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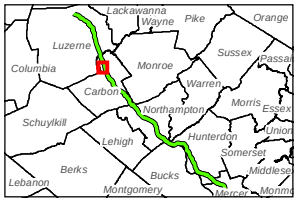
0 800 1,600 3,200
Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

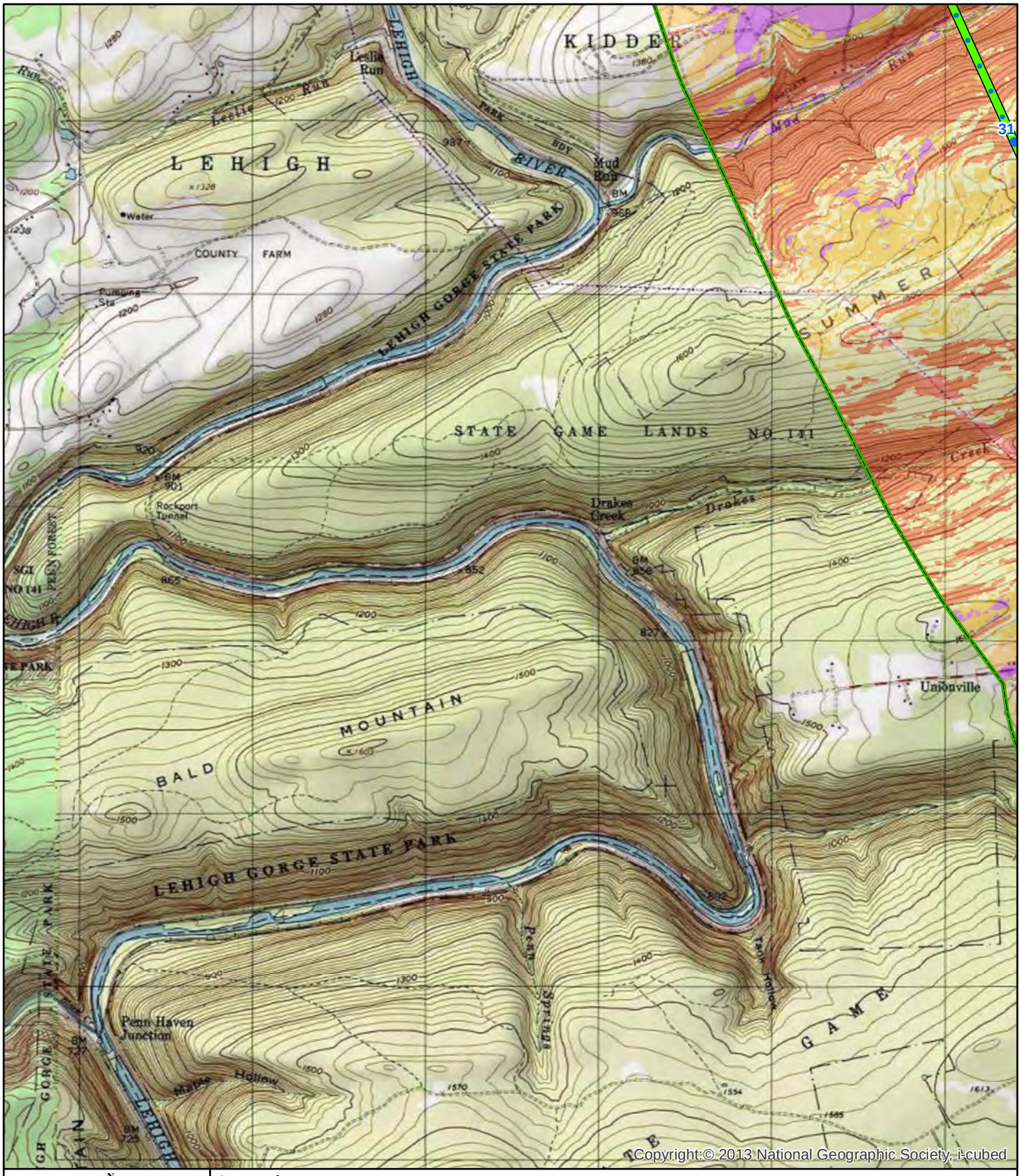
PennEast Pipeline Project
Pennsylvania Archaeological Resources



LOC: USGS Hickory Run Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 10 of 27

PennEast PIPELINE

PennEast Pipeline Company, LLC



N
W E
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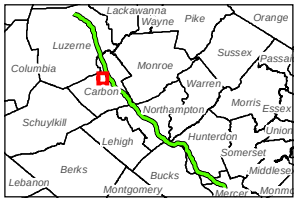
0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

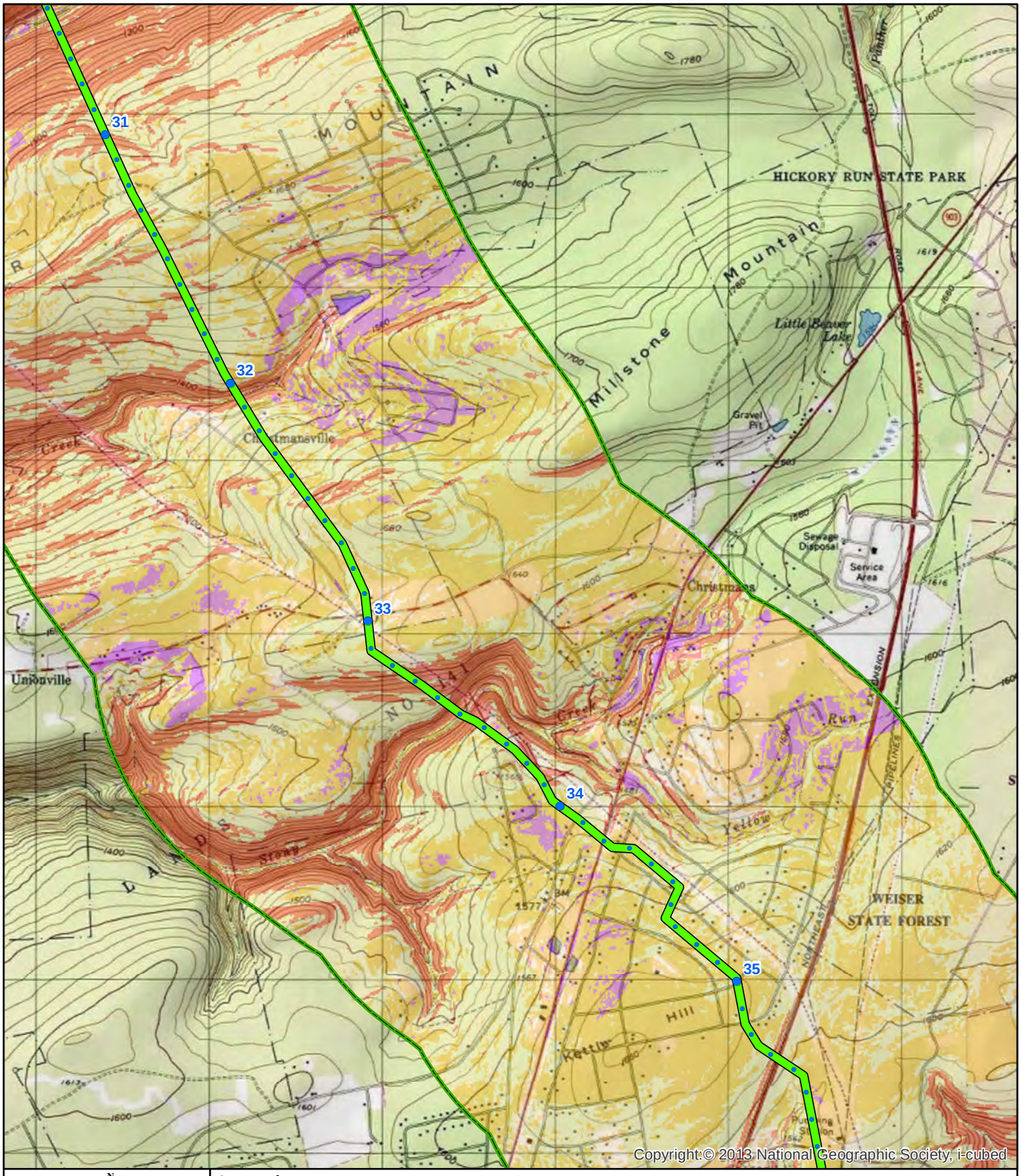
PennEast Pipeline Project
Pennsylvania Archaeological Resources



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: USGS Christmans Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 11 of 27



N
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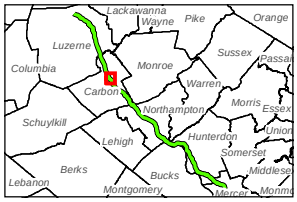
0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

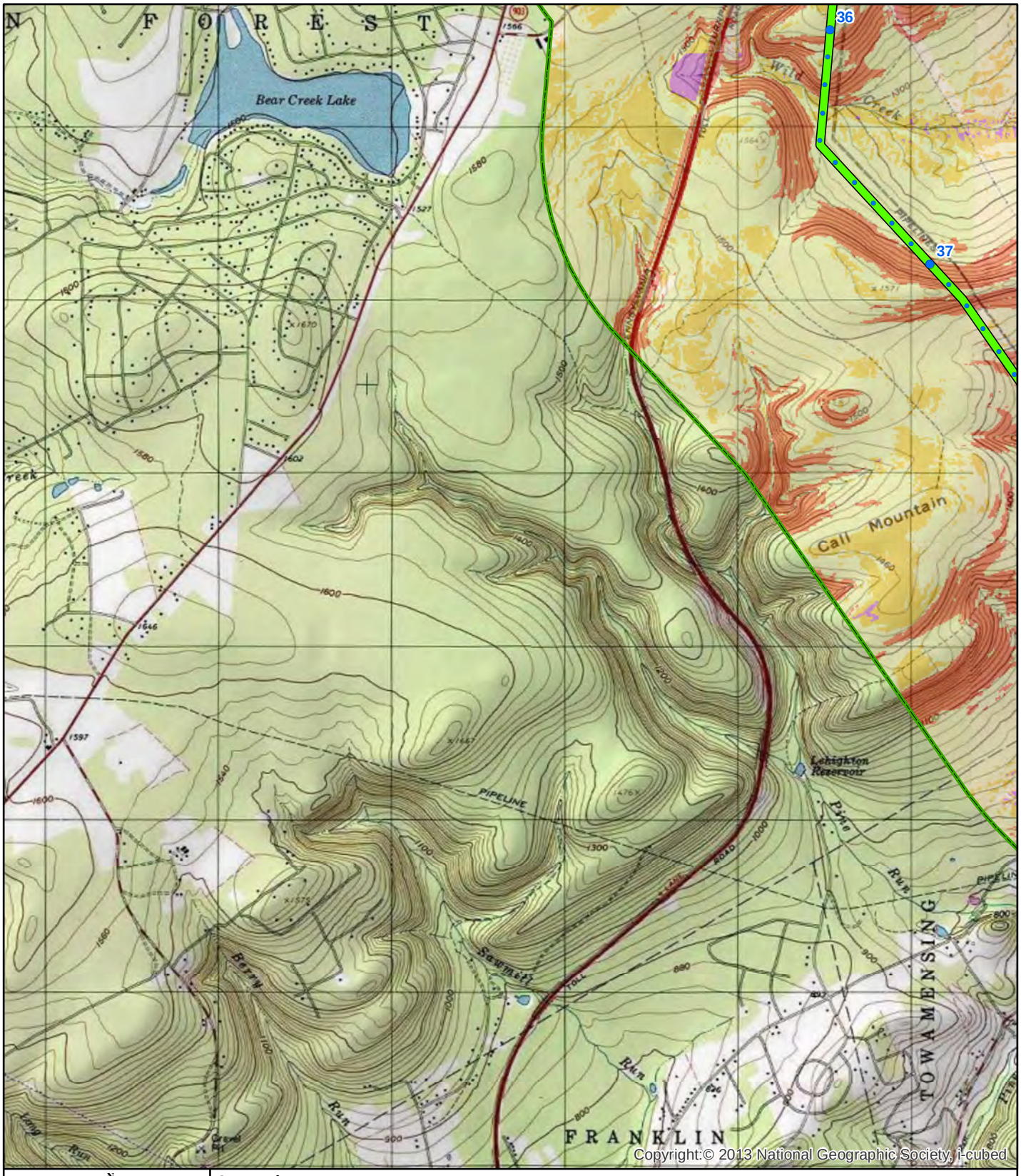
PennEast Pipeline Project
Pennsylvania Archaeological Resources



LOC: USGS Christmans Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 12 of 27

PennEast PIPELINE

PennEast Pipeline Company, LLC



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0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area

Archaeological Sensitivity Model

- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
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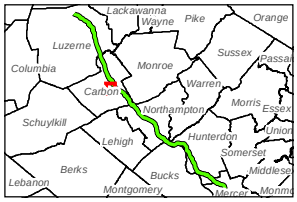
TITLE:

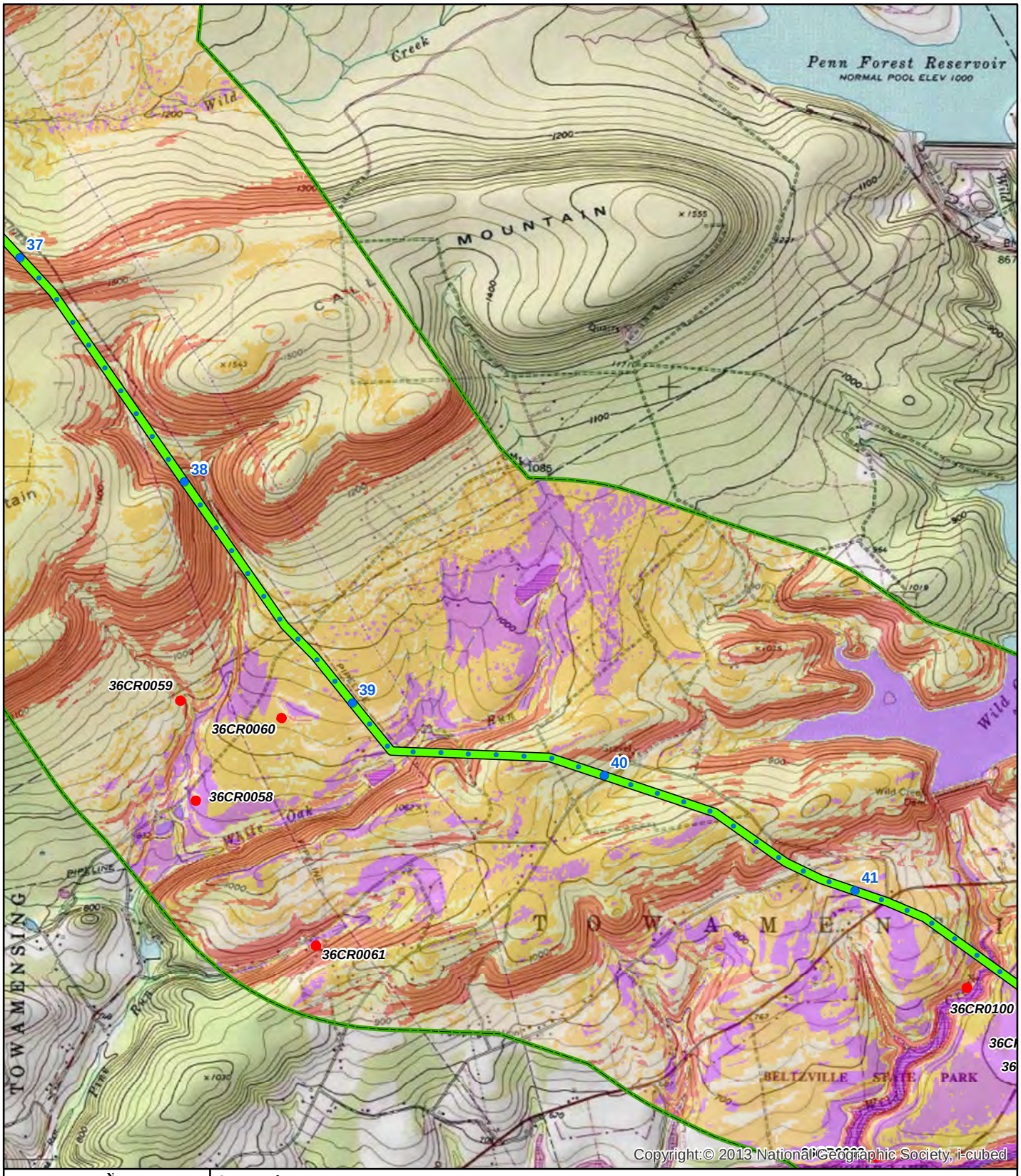
PennEast Pipeline Project
Pennsylvania Archaeological Resources

LOC: USGS Christmans Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 13 of 27



PennEast PIPELINE

PennEast Pipeline Company, LLC



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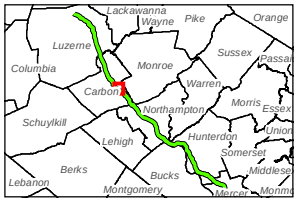
0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

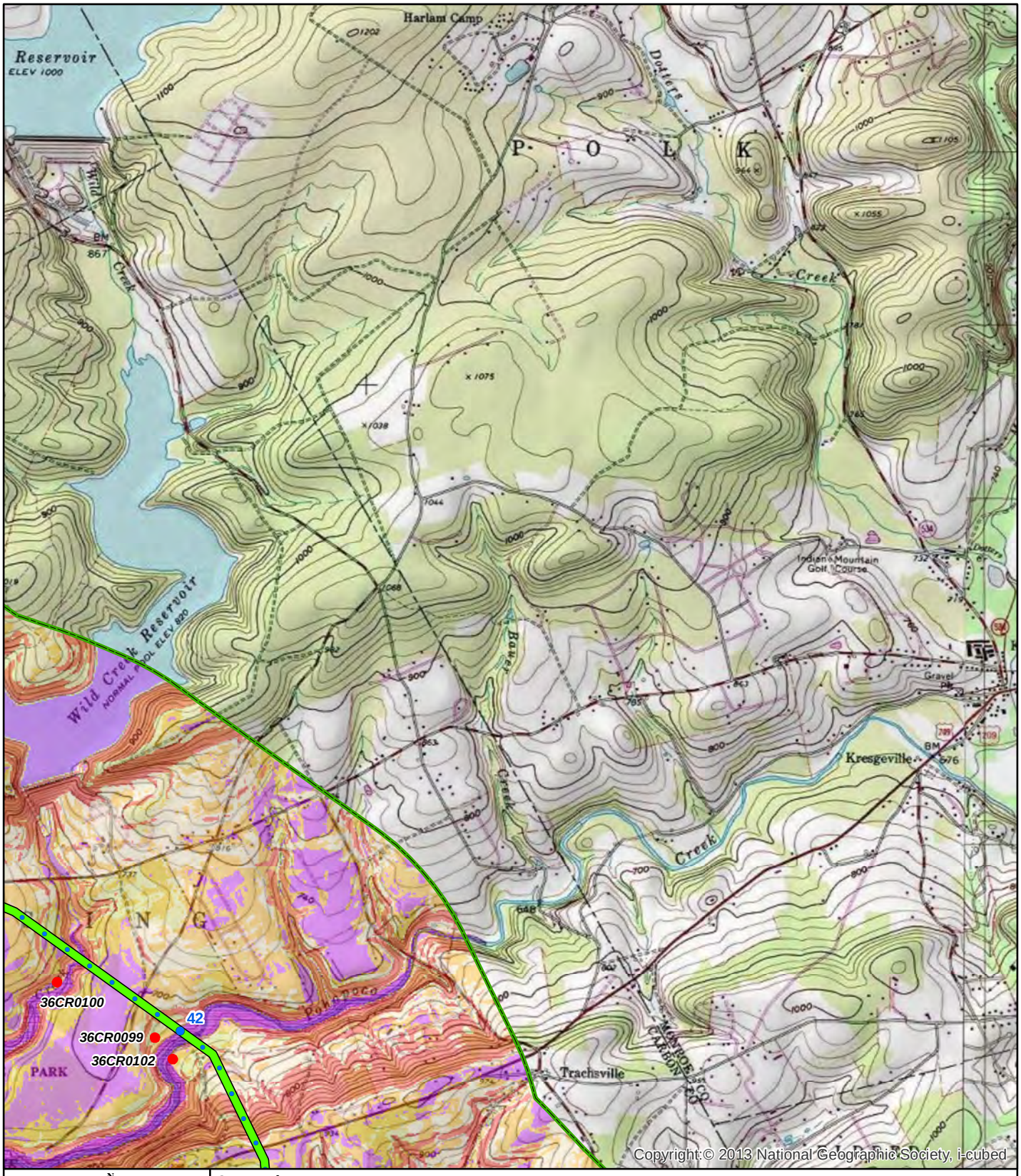
PennEast Pipeline Project
Pennsylvania Archaeological Resources



LOC: USGS Pohopoco Mountain Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 14 of 27

PennEast PIPELINE

PennEast Pipeline Company, LLC



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0 800 1,600 3,200 Feet

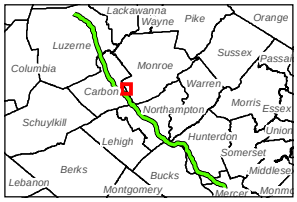
Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

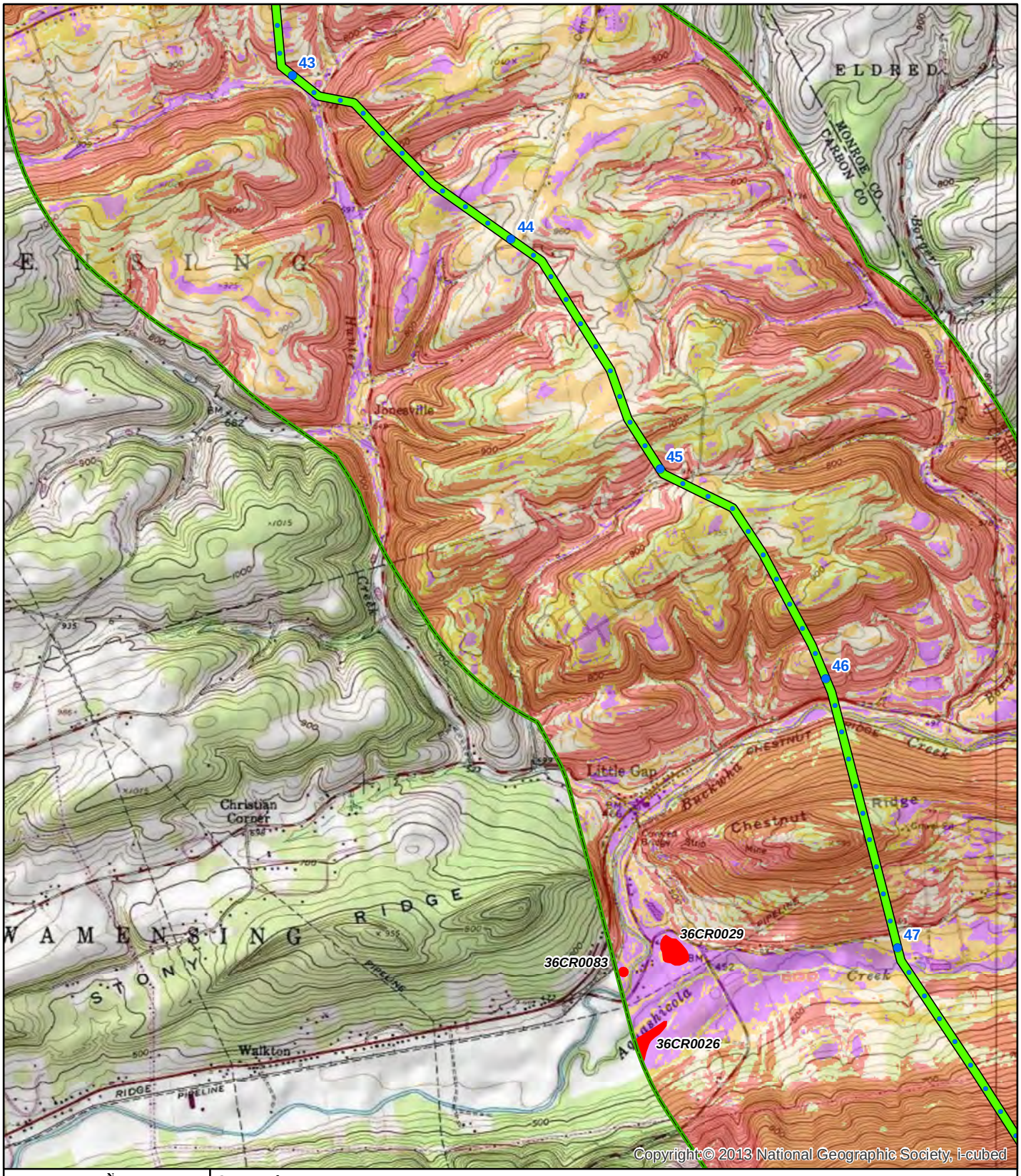
PennEast Pipeline Project
Pennsylvania Archaeological Resources

LOC: USGS Pohopoco Mountain Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 15 of 27



PennEast PIPELINE

PennEast Pipeline Company, LLC



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0 800 1,600 3,200 Feet

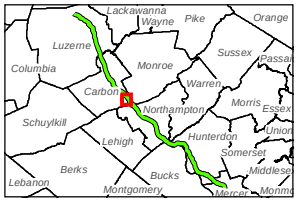
Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
- State Boundary

TITLE:

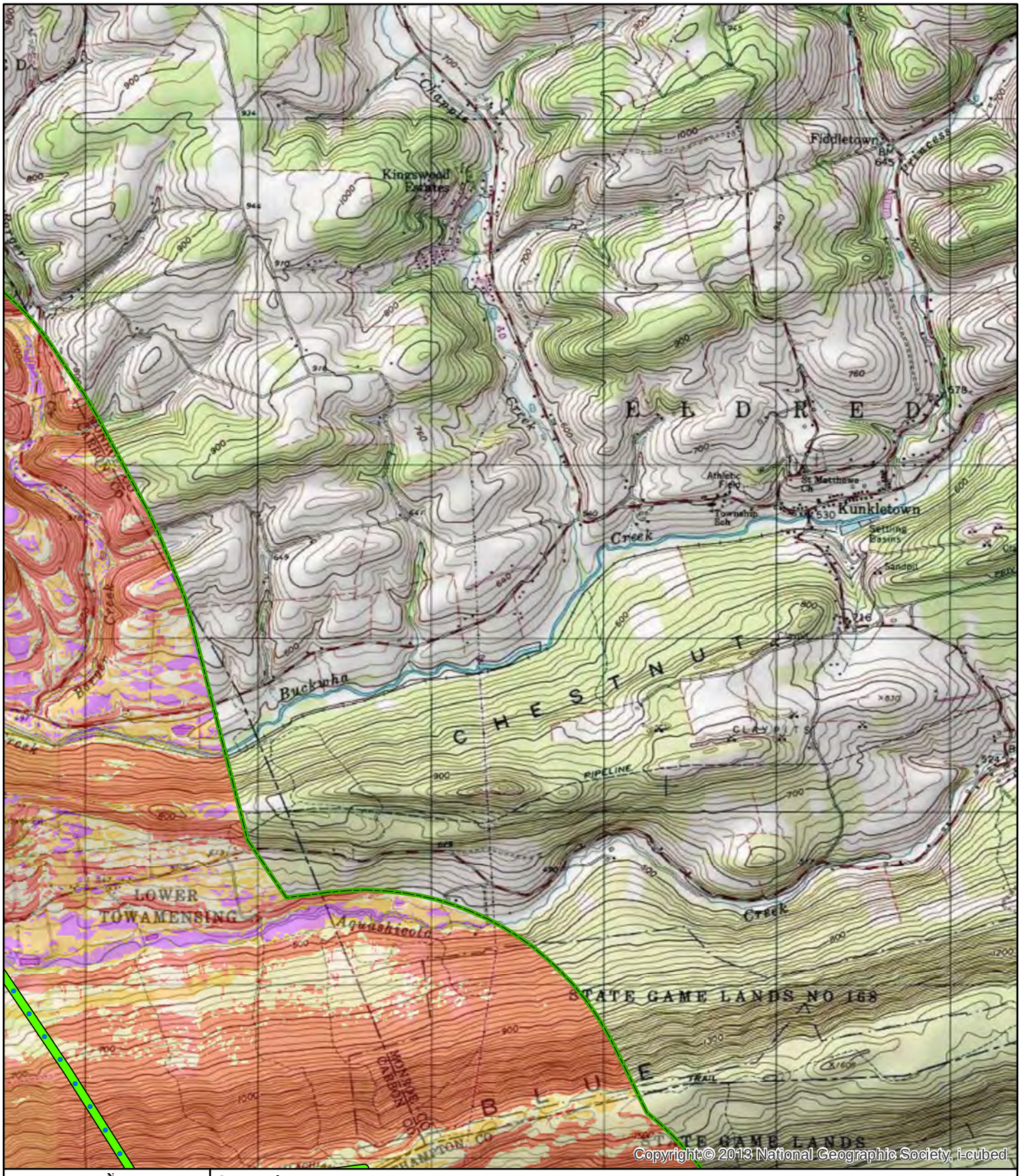
PennEast Pipeline Project
Pennsylvania Archaeological Resources

LOC: USGS Palmerton Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 16 of 27



PennEast PIPELINE

PennEast Pipeline Company, LLC



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0 800 1,600 3,200 Feet

Legend

- Mile Postings
- PennEast Pipeline
- 1-Mile Study Area
- Archaeological Sensitivity Model
- Low Sensitivity
- Moderate Sensitivity
- High Sensitivity
- Steep Slope (> 15%)
- Known Archaeological Site
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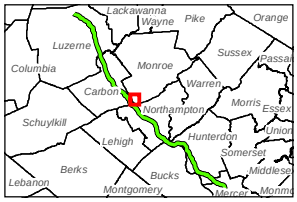
TITLE:

PennEast Pipeline Project
Pennsylvania Archaeological Resources



PennEast PIPELINE

PennEast Pipeline Company, LLC

LOC: USGS Kunkletown Quadrangle			REV.:
CKD. BY: BH	ENG.:	Date: 8/15/2014	W.O.:
DRN. BY: VP	SCALE: SEE GRAPHIC SCALE	DWG. NO.:	SHEET: 17 of 27