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July 21, 2010

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

BELL BEND NUCLEAR POWER PLANT
RESPONSE TO ENVIRONMENTAL
INFORMATION NEEDS, SECOND SUBMITTAL
BNP-2010-173 Docket No. 52-039

The purpose of this letter is to respond to the following Environmental Information Needs discussed at the June 15-17, 2010, Alternative Sites Audit:

- AE-7
- AE-16
- AE-19
- AE-20
- H-3
- H-4
- LU-1
- LU-12
- SE-9
- TE-4

The commitment contained in this submittal is the future revision of the combined license application as indicated in the enclosure.

If you have any questions, please contact the undersigned at 570-802-8102.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 21, 2010

Respectfully,

Rocco R. Sgarro

Rocco R. Sgarro

RRS/dw

Enclosure: Information Needs Responses, Alternative Sites Audit, June 15-17, 2010, Bell Bend Nuclear Power Plant, Luzerne County Pennsylvania

D102
NRO

cc: (w/ Enclosures)

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Enclosure

Information Needs Responses
Alternative Sites Audit
June 15-17, 2010
Bell Bend Nuclear Power Plant
Luzerne County Pennsylvania

AE-7

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss the construction process for the CWS intake/discharge systems at the proposed Alternative Sites. The description for each site is the same and is weighted heavily towards dredging and its associated effects. Conversely, the intake/discharge system proposed for Bell Bend would use a cofferdam system and excavation. Would the CWS intake/discharge systems for the proposed Alternative Sites differ from that described for Bell Bend? Why would the construction method for the Alternative Sites differ from that for Bell Bend?

Response: A subject matter expert will be available to discuss the Circulating Water System (CWS) intake/discharge systems at the proposed alternative sites.

It is understood and expected that the different environmental conditions found within the waterways serving the alternative sites as cooling water sources would have varying levels of sensitivity to Cooling Water Intake Structure (CWIS) installation and operation. Assumptions defining the potential for impacts such as substrate material could be made; however, the local site-specific conditions could vary widely from these generalizations, and the selection of specific locations for intake and discharge structures would be based in part upon optimizing constructability as well as minimizing environmental impacts. Data were not used in the evaluation of potential impacts to the aquatic environment in site scoring. Rather, it was assumed that technology would be adjusted to fit the varying conditions among the alternative sites to regulate impacts, and consequently differences in projected aquatic impacts among the alternative sites is moderated.

It has been anticipated throughout the site evaluation process that the method of in-water work most protective of the environment would be used. However, the use of these techniques cannot be asserted with any certainty at this time. Limited data on topics such as specific local soil characteristics and geology, scouring velocity and substrate material in the location of the CWIS components prevents the descriptions in the ER from being more definitive regarding work methodology. The acquisition of such data clearly exceeds reconnaissance-level evaluation.

The intake and discharge structures for the Humboldt site would probably be similar in configuration to the Bell Bend design. They would be located in the vicinity of the discharge of Nescopeck Creek into the Susquehanna River. Their actual locations would be established to avoid impacting the wetlands around Nescopeck Creek and to allow the least intrusive construction methodology. Conditions at the selected locations would be expected to be similar to those at the Bell Bend locations, thereby allowing the installation to be made using cofferdams and excavation, however, the actual methodology cannot be stated with assurance in the absence of specific site data.

The intake and discharge structures for the Seedco Site would also probably be similar in configuration to the Bell Bend design. They would be located upstream of the discharge of Shamokin Creek at a site that would avoid local wetlands and allow the least intrusive construction methodology. The preferred installation methodology would be to utilize cofferdams and excavation at this site as well. However, the use of dredging and or blasting cannot be ruled out in the absence of a specific location and appropriate site data.

The intake and discharge structures for the Montour site are expected to be similar to those utilized for the existing Montour Power Plant. They consist of a perforated intake pipe extending laterally across a portion of the river and a diffuser pipe discharge also extending into the river. The existing pumping structure is conspicuously elevated based upon local flooding experience.

Since the cooling water pipelines would parallel the existing pipelines, albeit upon a new or expanded ROW, the intake and discharge structures would be located in the general vicinity of the existing structures but at a location which would avoid or minimize interaction with the existing facility. The least intrusive construction techniques would be employed; however, it is uncertain at this time if dredging would be required for the installation of both the intake and discharge pipes in this shallow reach of the river.

In the absence of a specific design concept for the intake and discharge structures, it can be assumed that some amount of dredging in the area of the river bank will be necessary at all of the sites, however it is not possible to define the need for, as well as the extent and nature of, excavation of the river bottom. The evaluation of design alternatives would consider the physical conditions at the site and the water body, potential environmental impacts, potential operational impacts and costs.

COLA Impact:

BBNPP COLA ER Sections 9.3.2.2.3, 9.3.2.3.3, and 9.3.2.4.3 will be revised, as follows, in a future revision of the COLA:

9.3.2.2.3 Water

The main source of cooling water for the Montour site would be the West Branch Susquehanna River. The 7Q10 for the period of record (July 1999 to July 2009) for the river at the nearest USGS gage (01553500 at downstream side of Market Street Bridge on State Highway 45 at Lewisburg, 0.2 mi [0.3 km] downstream from Buffalo Creek, and 7.4 mi [11.9 km] upstream from mouth) is approximately 489 MGD (1851 mld) (USGS, 2009b). Therefore, the water availability in the West Branch Susquehanna River at low flow exceeds the total water withdrawal at the site by approximately 10 times.

The intake and discharge structures for the Montour site are expected to be similar to those utilized for the existing Montour Power Plant. They consist of a perforated intake pipe extending laterally across a portion of the river and a diffuser pipe discharge also extending into the river. The existing pumping structure is conspicuously elevated based upon local flooding experience.

9.3.2.3.3 Water

The main source of water for the Humboldt site would be the Susquehanna River. The 7Q10 for the period of record (July 1999 to July 2009) for the river at the nearest USGS gage (01536500 on left bank at downstream side of North Street bridge in Wilkes-Barre, and 1.8 mi [2.9 km] upstream from Toby Creek) is approximately 505 MGD (1,912 mld) (USGS, 2009a). Therefore, the water availability in the Susquehanna River at low flow would exceed the total water withdrawal at the Humboldt site by approximately 10 times.

The intake and discharge structures for the Humboldt site would probably be similar in configuration to the Bell Bend design. They would be located in the vicinity of the discharge of Nescopeck Creek into the Susquehanna River. Their actual locations would be established to

avoid impacting the wetlands around Nescopeck Creek and to allow the least intrusive construction methodology. Conditions at the selected locations would be expected to be similar to those at the Bell Bend locations, thereby allowing the installation to be made using cofferdams and excavation, however, the actual methodology cannot be stated with assurance in the absence of specific site data.

9.3.2.4.3 Water

The main source of water for the Seedco site would be the Susquehanna River. The lowest 7Q10 for the period of record (July 1999 to July 2009) for the river at the nearest USGS gage (01554000 on right bank at borough of Shamokin Dam, on grounds of former Pennsylvania Power and Light Co. generating plant, 1.0 mi [1.6 km] downstream from Sunbury Fabridam, and 1.8 mi [2.9 km] south of Sunbury) is approximately 1,389 MGD (5,257 mld) (USGS, 2009g). Therefore, the water availability in the Susquehanna River at low flow would exceed the total water withdrawal at the Seedco site by approximately 28 times.

The intake and discharge structures for the Seedco Site would also probably be similar in configuration to the Bell Bend design. They would be located upstream of the discharge of Shamokin Creek at a site that would avoid local wetlands and allow the least intrusive construction methodology. The preferred installation methodology would be to utilize cofferdams and excavation at this site. However, the use of dredging and or blasting cannot be ruled out in the absence of a specific location and appropriate site data.

AE-16

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can provide a concise description of the water body located at the southeast corner of the proposed Montour site boundary.

Response: A subject matter expert will be available to provide a concise description of the water body located at the southeast corner of the proposed Montour site boundary. The East Branch of the Chillisquaque Creek runs east-west through the southern portion of the Montour site (onsite). The former ash basin of the Montour Coal Plant appears in some older aerial and topographic figures, including ER Figure 9.3-21, Montour Site Vicinity Map, as a water body/lake just to the southeast of the Montour site boundary. This former ash basin has been reclaimed, filled and reseeded, and is now a grass-covered field. There is no other water body located at the southeast corner of the proposed Montour site boundary. In a future revision of ER Section 9.3, Figure 9.3-21 will be revised to clarify that the apparent water body just outside the Montour site boundary is not a water body but a reclaimed former ash pond.

COLA Impact:

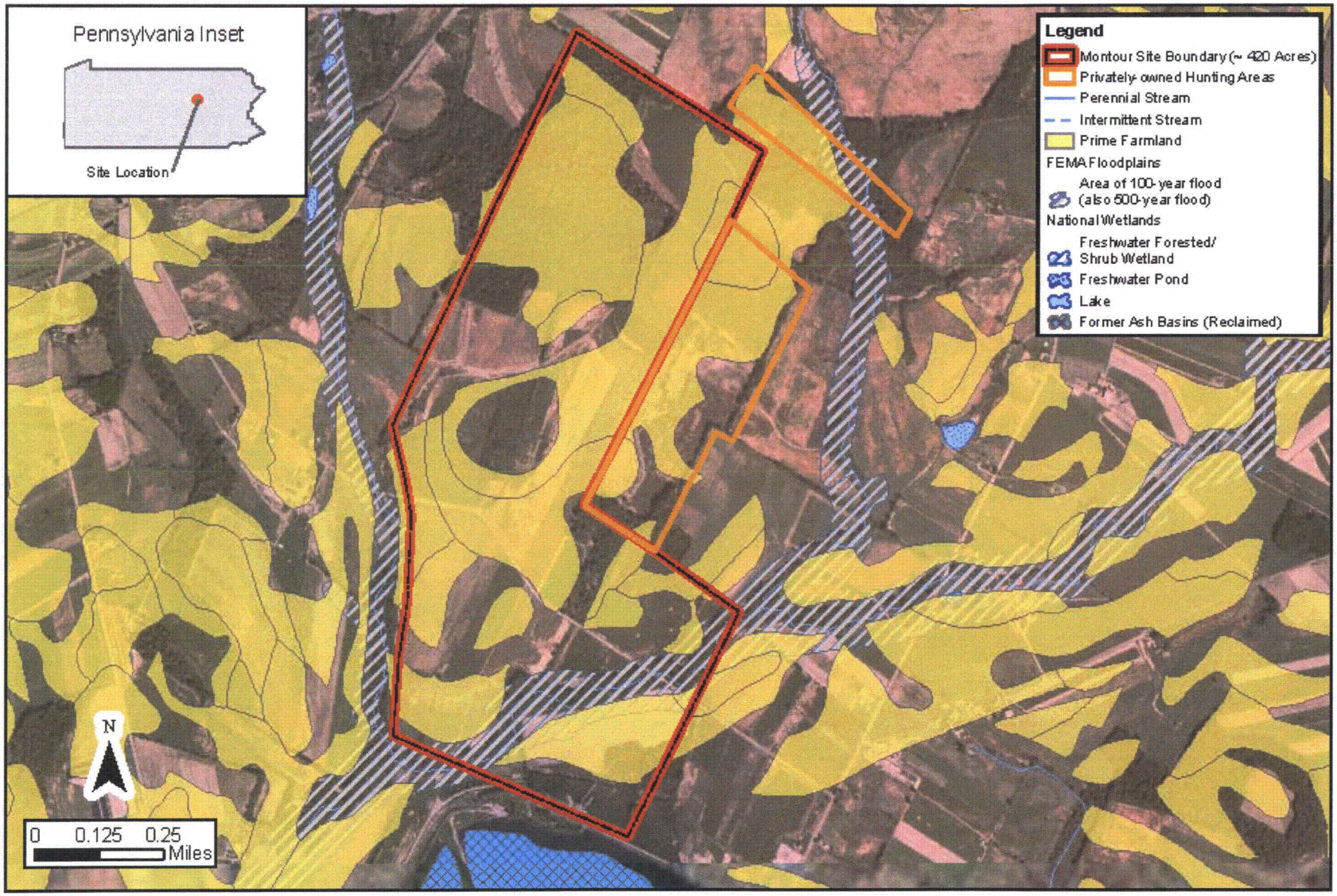
BBNPP COLA ER Section 9.3.2.2.5 will be revised and Figure 9.3-21 replaced, as follows, in a future revision of the COLA:

9.3.2.2.5 Aquatic Ecology and Sensitive Species

Construction-related impacts on the aquatic ecology would be similar to those described in Section 4.3 and include loss of wetlands and temporary loss of habitat and short-term degradation of water quality in isolated areas due to in water and shoreline construction of the Circulating Water System (CWS) Makeup Water Intake Structure. According to the EDR database, there are wetlands located within 0.5 mi (0.8 km) of the Montour site. Tables 9.3-12, 9.3-13, and 9.3-14 provide a summary of wetlands and streams on the BBNPP site and *Alternative Sites*. Table 9.3-12 indicates that no wetlands occur on the Montour site, but that there are wetlands in the general vicinity. Table 9.3-12 also indicates that there would be impacts on 3,891 linear feet (lf) (1,186 m) of streams on the Montour site, primarily along the East Branch Chillisquaque Creek, which flows through the Montour site (ESRI, 2009b; USFWS, 2009). The Middle Branch Chillisquaque Creek flows along the southwestern boundary of the Montour Site and would be not be impacted.

The former ash basin of the Montour Coal Plant appears in some older aerial and topographic figures, including ER Figure 9.3-21, Montour Site Vicinity Map, as a water body/lake just to the southeast of the Montour site boundary (see ER Figure 9.3-21 Legend). This former ash basin has been reclaimed, filled and reseeded, and is now a grass-covered field. There is no other water body located at the southeast corner of the proposed Montour site boundary.

Figure 9.3-21. Montour Site Vicinity Map



AE-19

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can verify whether trout are stocked in streams on the Montour and Humboldt Sites. The cited reference documenting trout stocking on page 32 (Montour) and page 49 (Humboldt) is "PFBC 2009b," which is for Northumberland County, not Montour or Luzerne Counties.

Response: A subject matter expert will be available to discuss whether trout are stocked in streams on the Montour and Humboldt sites. The same website reference (Pennsylvania Fish and Boat Commission [PFBC], 2009b) provides information for all trout stocking activities in Pennsylvania – for the entire state and by county. Trout stocking does occur in these counties but not on the Montour or Humboldt sites (PFBC, 2010a).

As previously stated, trout is not stocked on the Humboldt site. Stony Creek, which flows from the nearby Humboldt Reservoir through Cranberry Creek into Black Creek, is the nearest trout stream. Stony Creek is a year-round stream that is not stocked. Stony Creek does not receive runoff from the Humboldt site and would not be impacted by development of the site. (PFBC, 2010a)

Trout are not stocked in streams that pass through or near the Montour site (PFBC, 2010a). Lake Chillisquaque is not stocked for any species; fish populations are maintained through natural reproduction. (PFBC, 2005)

In a future revision of the Environmental Report (ER) Section 9.3, the following sentence will be added to ER Section 9.3.2.2.5: "Trout are not stocked in streams that pass through or near the Montour site (PFBC, 2010a)." The associated reference will be added to ER Section 9.3.4.

In a future revision of ER Section 9.3, the following sentences will be added ER Section 9.3.2.3.5: "Trout are not stocked on the Humboldt site. Stony Creek, a natural trout stream, is the nearest trout stream to the Humboldt site, but is upstream of the site (PFBC, 2010a)." The associated reference will be added to ER Section 9.3.4.

Data Sources:

PFBC, 2005. 2005 Biologist Report - Lake Chillisquaque, Montour County, May 9-13, 2005, Website: http://www.fishandboat.com/images/fisheries/afm/2005/3x07_18chilli.htm, Date accessed: June 7, 2010. Note: Copyright protected. Electronic version not available for printing.

PFBC, 2010a. PA Stream Sections that Support Natural Reproduction of Trout, Website: http://www.fish.state.pa.us/trout_repro.htm, Date accessed: June 7, 2010. Note: Copyright protected. Electronic version not available for printing.

PFBC, 2010b. PA Warmwater/Coolwater Fisheries, Website: http://pfbc.state.pa.us/wwcw/wwcw.aspx, Date accessed: June 7, 2010.

COLA Impact:

BBNPP COLA ER Section 9.3.2.2.5 (end of 10th paragraph), Section 9.3.2.3.5 (end of eighth paragraph), and Section 9.3.4 will be revised, as follows, in a future revision of the COLA:

9.3.2.2.5 Aquatic Ecology and Sensitive Species

Pennsylvania has recreationally important fisheries, including bluegill, pumpkinseed, redbreast sunfish, rock bass, black and white crappie, yellow perch, smallmouth and largemouth bass, walleye, catfish (both channel and bullhead), carp, and a variety suckers. In addition, brook, rainbow, and brown trout are widely stocked to support fishing for these species (PFBC, 2009a).

Most of these species, with the exception of trout, could occur in the streams within the Montour site or along the potential water line corridor. Species that prefer larger rivers and lakes, such as the black and white crappies, bluegill, pumpkinseed, walleye, catfish, and suckers, could occur in the Susquehanna River (PFBC, 2009a). Brown and rainbow trout are not stocked in the drainage proposed for the water line corridor (PFBC, 2009b), and these species would not be expected to occur at the Montour site (PFBC, 2009a). Trout are not stocked in streams that pass through or near the Montour site (PFBC, 2010a).

9.3.2.3.5 Aquatic Ecology and Sensitive Species

Pennsylvania has recreationally important fisheries, including bluegill, pumpkinseed, redbreast sunfish, rock bass, black and white crappie, yellow perch, smallmouth and largemouth bass, walleye, catfish (both channel and bullhead), carp and a variety suckers. In addition, brook, rainbow, and brown trout are widely stocked to support fishing for these species (PFBC, 2009a). Most of these species, with the exception of trout, could occur in the streams within the Humboldt site or along the potential water line corridor. Species that prefer larger rivers and lakes, such as the black and white crappies, bluegill, pumpkinseed, walleye, catfish, and suckers, could occur in the Susquehanna River (PFBC, 2009a). Brown and rainbow trout are not stocked in the drainage proposed for the water line corridor (PFBC, 2009b), and these species would not be expected to occur at the Humboldt site. Trout are not stocked on the Humboldt site. Stony Creek, a natural trout stream, is the nearest trout stream to the Humboldt site, but is upstream of the site (PFBC, 2010a).

9.3.4 References

PFBC, 2010a. PA Stream Sections that Support Natural Reproduction of Trout, Website: http://www.fish.state.pa.us/trout_repro.htm, Date accessed: June 7, 2010. Note: Copyright protected. Electronic version not available for printing.

PFBC, 2010b. PA Warmwater/Coolwater Fisheries, Website: http://pfbc.state.pa.us/wwcw/wwcw.aspx, Date accessed: June 7, 2010.

AE-20

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss the aquatic resources on the Humboldt site. One 4-ac pond is listed in Table 9.3-13 as being onsite. Identify the location of this pond. There appear to be at least four small "ponds" on the western part of the site (Figure 9.3-26). Were all included in the evaluation? Humboldt Reservoir is immediately north of the site. Would the reservoir or its outlet stream be affected by a new nuclear power plant on the site? The ER text (Section 9.3, Page 49) says "Aquatic habitat types present on and in the area of the Humboldt site include streams, rivers, lakes, and ponds." Identify the lakes on or near the site.

Response: A subject matter expert will be available to discuss the aquatic resources on the Humboldt site.

There are five freshwater ponds on the Humboldt site, ranging in size from 0.3 acre to 1.4 acres. The total surface area of the five ponds is 3.8 acres. For the alternative site evaluation described in ER Section 9.3.2.3.5 and ER Table 9.3-13, pond habitat was discussed collectively, encompassing approximately 4 acres. All ponds occurring on the site were included in the evaluation.

The Humboldt Reservoir, a man-made impoundment, is the only lake in the vicinity of the Humboldt site. It is approximately 500 feet north of the Humboldt site and occupies 31.2 acres. This reservoir is a drinking water supply (one of many) for Hazleton City Authority Water Department, which supplies Hazleton and 13 other municipalities. No impacts to the Humboldt Reservoir or the stream that drains into the Humboldt Reservoir would be expected from the Humboldt site.

COLA Impact:

BBNPP COLA ER Section 9.3.2.3.5 will be revised, as follows, in a future revision of the COLA:

9.3.2.3.5 Aquatic Ecology and Sensitive Species

Construction-related impacts on the aquatic ecology would be similar to those described for the BBNPP site in Section 4.3 and include loss of wetlands and temporary loss of habitat and short-term degradation of water quality in isolated areas due to in water and shoreline construction of the CWS Makeup Water Intake Structure. Tables 9.3-12, 9.3-13, and 9.3-14 provide a summary of wetlands and streams on the BBNPP site and *Alternative Sites*. Table 9.3-12 indicates that 3.8 acres (1.5 ha) of wetlands occur on the Humboldt site and additional wetlands occur in the general vicinity (ESRI, 2005; USFWS, 2008b). Table 9.3-12 also indicates that there would be impacts to 5,057 lf (1541.4 m) of streams on the Humboldt site, primarily along tributaries to Black Creek (ESRI, 2005; USFWS, 2008b).

There are five freshwater ponds on the Humboldt site, ranging in size from 0.3 acre to 1.4 acres. The total surface area of the five ponds is 3.8 acres. For the alternative site evaluation described in ER Section 9.3.2.3.5 and ER Table 9.3-13, pond habitat was discussed collectively, encompassing approximately 4 acres. All ponds occurring on the site were included in the evaluation.

The Humboldt Reservoir, a man-made impoundment, is the only lake in the vicinity of the Humboldt site. It is approximately 500 feet north of the Humboldt site and occupies 31.2 acres. This reservoir is a drinking water supply (one of many) for Hazleton City Authority Water Department, which supplies Hazleton and 13 other municipalities. No impacts to the Humboldt Reservoir or the stream that drains into the Humboldt Reservoir would be expected from the Humboldt site.

H-3

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss the availability of municipal or private sanitary water treatment for each alternative site.

Response: A subject matter expert will be available to discuss the availability of municipal or private sanitary water treatment for each alternative site.

As discussed in ER Sections 9.3.2.2.3, 9.3.2.3.3, and 9.3.2.4.3 for the Montour, Humboldt, and Seedco sites, respectively, it is anticipated that there would be either site-specific water treatment systems or municipal systems for sanitary wastewater for each of the alternative sites.

As stated in ER Section 9.3.2.2.6, Montour County, where the Montour site is located, has one major and three minor public (municipal) wastewater/sanitary sewer treatment plants. The total wastewater flow to these four municipal public sewer systems is approximately 3.9 million gallons a day (MGD) [14.8 million liters a day (mld)]. (PADEP, 2009d) According to the Montour County Comprehensive Plan, sewer system capacity within the county is critical and urgent for growth. This plan recommends a multi-municipal approach to resolving the sewage treatment capacity issues that involves expansions or conveyances of local wastewater treatment plants. (Montour County Planning Commission [MCPC], 2009)

As stated in ER Section 9.3.2.3.6, Luzerne County, where the Humboldt site is located, has four major and nine minor public (municipal) wastewater/sanitary sewer treatment plants. The total wastewater flow to these 13 municipal public sewer systems within Luzerne County is approximately 73.6 MGD (278.6 mld) (PADEP, 2009d). Dupont Borough recently completed a modern $5-million sewer collection system (Luzerne County, 2009b).

As stated in ER Section 9.3.2.4.6, Northumberland County, where the Seedco site is located, has 5 major and 14 minor public (municipal) wastewater/sanitary sewer treatment plants. The total wastewater flow to these 19 municipal public sewer systems within Northumberland County is approximately19.6 MGD (74.2 mld). (PADEP, 2009d)

In a future revision of ER Section 9.3, the words "if available" will be removed from ER Section 9.3.2.1.3, ER Section 9.3.2.2.3, ER Section 9.3.2.3.3, and ER Section 9.3.2.4.3 as shown in the following COLA Impact. This will clarify that either a site-specific water treatment system or a municipal treatment system would be used to treat water discharges.

Also in a future revision of ER Section 9.3, the following partial sentence will be removed from ER Section 9.3.2.3.6 as indicated in the following COLA Impact: "and the Township of Salem is currently in the process of initiating a new sewer system in the residential areas of East Berwick and Beach Haven (Luzerne County, 2009c)." The new sewer system referred to in this statement is not in the vicinity of the Humboldt site. The associated reference (Luzerne County, 2009c) will also be removed from ER Section 9.3.4.

Data Sources:

Luzerne County, 2009b. Luzerne County Living, Dupont Borough, Website: http://www.luzernecounty.org/living/municipalities/dupont_borough, Date accessed: October 14, 2009.

MCPC, 2009. Montour County Planning Commission, Montour County Comprehensive Plan, April 2009.

PADEP, 2009d. Pennsylvania Department of Environmental Protection, Water Standards and Facility Regulation, Wastewater Facilities and Permits, Municipal Sewage NPDES Permits Excel Spreadsheet, Updated June 2009, Website: http://www.depweb.state.pa.us/watersupply/cwp/view.asp?a=1450&q=535524#spreadsheet, Date accessed: October 9, 2009.

COLA Impact:

BBNPP COLA ER Sections 9.3.2.1.3, 9.3.2.2.3, 9.3.2.3.3, 9.3.2.4.3, 9.3.2.3.6, and 9.3.4 will be revised, as follows, in a future revision of the COLA:

9.3.2.1.3 Water

Water discharges from the BBNPP to the North Branch Susquehanna River would include cooling tower blowdown, treated process wastewater, treated sanitary wastewater, and small amounts of radioactive water. It is anticipated that there would be a site-specific water treatment system or the use of a municipal system~~, if available,~~ for the sanitary wastewater from the BBNPP. Notwithstanding the use of potential engineered mitigation, the introduction of cooling tower blowdown to the receiving waters represents a limited thermal discharge. Ensuring permitted limits for water withdrawal and discharge are met through operational controls, and monitoring would minimize the potential for adverse impacts on water availability and water quality during operation of the BBNPP. Based on the implementation of operational controls and monitoring to meet permit limits, overall water use impacts from operation activities would be SMALL.

9.3.2.2.3 Water

Water discharges from the Montour site to the West Branch Susquehanna River would include cooling tower blowdown, treated process wastewater, treated sanitary wastewater, and small amounts of radioactive water. Notwithstanding the use of potential engineered mitigation, the introduction of cooling tower blowdown to the receiving waters represents a limited thermal discharge. Ensuring permitted limits for water withdrawal and discharge are met through operational controls and monitoring will minimize the potential for adverse impacts to water availability and water quality during operation of the proposed new unit at the Montour site. It is anticipated that there would be a site-specific water treatment system or the use of a municipal system for sanitary wastewater~~, if available~~. Based on the implementation of operational controls and monitoring to meet permit limits, overall water use impacts from operation activities would be SMALL.

9.3.2.3.3 Water

Water discharges from the Humboldt site to the Susquehanna River would include cooling tower blowdown, treated process wastewater, treated sanitary wastewater and small amounts of radioactive water. Notwithstanding the use of potential engineered mitigation, the introduction of cooling tower blowdown to the receiving waters represents a limited thermal discharge. Ensuring permitted limits for water withdrawal and discharge are met through operational controls and monitoring would minimize the potential for adverse impacts on water availability

and water quality during operation of the proposed new unit at the Humboldt site. It is anticipated that there would be a site-specific water treatment system or the use of a municipal system for sanitary wastewater~~, if available~~. Based on the implementation of operational controls and monitoring to meet permit limits, overall water use impacts from operation activities would be SMALL.

9.3.2.4.3 Water

Water discharges from the proposed new unit at the Seedco site to the Susquehanna River would include cooling tower blowdown, treated process wastewater, treated sanitary wastewater and small amounts of radioactive water. Notwithstanding the use of potential engineered mitigation, the introduction of cooling tower blowdown to the receiving waters represents a limited thermal discharge. Ensuring permitted limits for water withdrawal and discharge are met through operational controls and monitoring would minimize the potential for adverse impacts on water availability and water quality during operation of the proposed new unit at the Seedco site. It is anticipated that there would be a site-specific water treatment system or the use of a municipal system for sanitary wastewater~~, if available~~. Based on the implementation of operational controls and monitoring to meet permit limits, overall water use impacts from operation activities would be SMALL.

9.3.2.3.6 Socioeconomics

According to the USEPA, Luzerne County has 91 community PWSs, which are defined by the PADEP as a "system that provides piped water for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year. PWSs can be community, non-transient non-community, or transient non-community systems" (PADEP, 2009c). These 91 systems provide treated water to over 274,000 people throughout the County. Of the 91 systems, 7 of them use surface water as the primary water source, while the remaining 84 use groundwater. (USEPA, 2009c) In addition, Luzerne County has four major and nine minor public (municipal) wastewater/sanitary sewer treatment plants. The total wastewater flow to these 13 municipal public sewer systems within Luzerne County is approximately 73.6 MGD (278.6 mld). (PADEP, 2009d) According to Luzerne County, Dupont Borough recently completed a modern $5-million sewer collection system (Luzerne County, 2009b)~~, and the Township of Salem is currently in the process of initiating a new sewer system in the residential areas of East Berwick and Beach Haven (Luzerne County, 2009c)~~. Given the availability of existing vacant housing in the county and the within the 50-mi (80-km) radius of the site, it is unlikely that the in-migration associated with the construction would have any significant impact on water supply or sewage.

9.3.4 References

~~**Luzerne County, 2009c**. Luzerne County Living, Township of Salem, Website: http://www.luzernecounty.org/living/municipalities/township_of_salem, Date accessed: October 14, 2009.~~

H-4

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss the feasibility and economics of dry and hybrid cooling towers at the Bell Bend site, taking into account the cost and availability of makeup water.

Response: A subject matter expert will be available during the alternative site audit on June 15-17, 2010, to further discuss the feasibility and economics of dry and hybrid cooling towers at the Bell Bend site, taking into account the cost and availability of makeup water.

ER Section 9.4.1.1, "Evaluation of Alternative Heat Dissipation Systems" identifies and discusses the merits of the following six heat dissipation systems:

1. Other heat dissipation systems
   - Cooling Ponds
   - Spray Ponds
2. Once-through cooling
3. Natural draft cooling tower
4. Mechanical draft cooling tower
5. Hybrid (plume abated) cooling towers
6. Dry cooling systems (closed-loop cooling system)

Heat dissipation systems 1, 2, 5 and 6 were identified as not being viable (see ER Section 9.4.1.1 for specific details) for use at Bell Bend. As such, supporting Table 9.4-1 in the ER only addressed the natural draft cooling tower and mechanical draft cooling tower options. In order to provide a more complete answer to this Information Need, the following table presents an expansion of Table 9.4-1 to show the key parameters of dry air heat exchanger and CWS hybrid cooling tower designs. This information has been ascertained from manufacturers and published industry information. This information is considered to be most up to date and complete for conceptual engineering level. Technical and commercial considerations are taken into account when making such decisions.

As stated in the ER, dry cooling would have minimal water use while the hybrid cooling tower would have comparable water use. The cost of water is small relative to initial capital costs and annual operation and maintenance costs for the technologies.

Table 9.4-1—Comparison of Cooling Tower Evaluation Criteria

Type of Cooling	Footprint per Plant Unit (1,562 MWe) (a)	Maximum Height	Materials of Construction	Plant Efficiency Impact Difference e)	Auxiliary Load Difference (e)	Water Makeup (b)	Drift Rate	Pump Head	Visible Plume	Noise	Annual O&M Cost Difference (c e)	Capital Cost(d)
	Acres	Ft(m)		%	MW	gpm(Lpm)	gpm (Lpm)	Feet H_2O		dBA @ 1m	103 USD	103 USD
Natural Draft (2 Hyperbolic Towers)	16	~600(183)	Concrete	0	0	23,808(90,123)	8(30)	60	Yes	82	0	173,727
Rectangular Mechanical Draft (3 Towers)	24	~60(18)	Fiberglass (FRP)	-0.046	6.22	23,808(90,123)	8(30)	36	Yes	88	468	130,710
Round Mechanical Draft (4 Towers)	16	~60(18)	Fiberglass	-0.044	4.05	23,808(90,123)	8(30)	36	Yes	88	374.4	143,103
One Round Mechanical Draft (aka Fan-assisted Natural Draft)	8	~164(50)	Concrete	-0.101	8.49	23,808(90,123)	8(30)	44	Yes	88	374.4	135,429

Notes:
(a) Footprint includes the required separation between towers, if applicable.
(b) Water total makeup includes drift, evaporation, and blowdown (at 2 cycles of concentration).
(c) O&M costs are calculated at 1% or 2% of the capital cost, based on vendor input.
(d) The cost shown includes the initial cost of the cooling tower(s) and construction cost differences.
(e) The value shown is the difference between the identified option and the Natural Draft (2 Hyperbolic Towers) option.

Table 9.4-1 – Comparison of Cooling Tower Evaluation Criteria (Addendum)

Type of Cooling	Footprint per Plant Unit (1,562 MWe) (a)	Maximum Height	Materials of Construction	Plant Efficiency Impact Difference (e)	Auxiliary Load Difference (e)	Water Makeup (b)	Drift Rate	Pump Head	Visible Plume	Noise	Annual O&M Cost Difference (c, e)	Capital Cost(d)
	Acres	Ft(m)		%	MW	gpm (Lpm)	gpm (Lpm)	Feet H_2O		dBA @1m	10^3 USD	10^3 USD
Dry Cooling	7-30	39	Steel	25	13-79	139	0.0005	44	No	88	5,975	298,727
Hybrid	5-6	177	Concrete	0.5	21.85	39,402	-	-	No	96.7	3,791	189,527

Notes:

1. Dry cooling case includes air cooled condenser, steam ducting from turbine to ACC and condensate return piping, auxiliary cooling tower and reduced size offsite water storage. Offsite water storage cost is $48 million.

2. Hybrid case includes the same condenser and circulating water system as Natural Draft case plus hybrid cooling tower and offsite makeup water storage. The difference from base would be the incremental cost of the hybrid tower.

3. By regulations, noise at property boundary required to be ≤ 55 dB in evening.

COLA Impact:

BBNPP COLA ER Table 9.4-1 will be revised, as follows, in a future revision of the COLA:

Table 9.4-1 – Comparison of Cooling Tower Evaluation Criteria

Type of Cooling	Footprint per Plant Unit (1,562 MWe) (a)	Maximum Height	Materials of Construction	Plant Efficiency Impact Difference (e)	Auxiliary Load Difference (e)	Water Makeup (b)	Drift Rate	Pump Head	Visible Plume	Noise[h]	Annual O&M Cost Difference (c, e)	Capital Cost[(d)]
	Acres	Ft(m)		%	MW	gpm (Lpm)	gpm (Lpm)	Feet H_2O		dBA @1m	10^3 USD	10^3 USD
Natural Draft (2 Hyperbolic Towers)	16	~600(183)	Concrete	0	0	23,808 (90,123)	8(30)	60	Yes	82	0	173,727
Rectangular Mechanical Draft (4 Towers)	24	~60(18)	Fiberglass (FRP)	-0.046	6.22	23,808 (90,123)	8(30)	36	Yes	88	468	130,710
Round Mechanical Draft (4Towers)	16	~60(18)	Fiberglass	-0.044	4.05	23,808 (90,123)	8(30)	36	Yes	88	374.4	143,103
One Round Mechanical Draft (aka Fan-assisted Natural Draft)	8	~164(50)	Concrete	-0.101	8.49	23,808 (90,123)	8(30)	44	Yes	88	374.4	135<429
Dry Cooling[f]	7-30	39	Steel	25	13-79	139	0.0005	44	No	88	5,975	298,727
Hybrid[g]	5-6	177	Concrete	0.5	21.85	39,402	-	-	No	96.7	3,791	189,527

Notes:
(a) Footprint includes the required separation between towers, if applicable.
(b) Water total makeup includes drift, evaporation, and blowdown (at 2 cycles of concentration).
(c) O&M costs are calculated at 1% or 2% of the capital cost, based on vendor input.
(d) The cost shown includes the initial cost of the cooling tower(s) and construction cost differences.
(e) The value shown is the difference between the identified option and the Natural Draft (2 Hyperbolic Towers) option.
(f) Dry cooling case includes air cooled condenser (ACC), steam ducting from turbine to ACC and condensate return piping, auxiliary cooling tower and reduced size offsite water storage. Offsite water storage cost estimate is $48 million.
(g) Hybrid case includes the same condenser and circulating water system as Natural Draft case plus hybrid cooling tower and offsite makeup water storage. The difference from base would be the incremental cost of the hybrid tower.
(h) By regulations, noise at property boundary required to be ≤ 55 dB in evening.

LU-1

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert to discuss the possibility of natural gas or significant mineral resources being found underneath the alternative sites.

Response: A subject matter expert will be available to discuss the possibility of natural gas or significant minerals being found beneath the alternative sites.

If any of the alternative sites were to be acquired for development, all mineral rights including gas would be obtained to preclude any future impacts.

RAI question GEO 2.6-1 previously raised the issue of natural gas development in the area of the Bell Bend site as follows: "Provide a characterization of the economic viability of extracting natural gas in the Devonian period Marcellus shale that underlies the proposed BBNPP Site."

The response is reproduced below, and is considered to be equally valid for the alternative sites.

"Pennsylvania is a major producer of oil and gas in the eastern U.S. However, most of the oil and gas is being produced in western, northwestern, and northern Pennsylvania (see Figures 1 and 2). Recently, there has been great interest in the Marcellus and other Devonian shales in Pennsylvania and surrounding states (Milici and Swezey, 2006; Sumi, 2008). A new surge in drilling has occurred due to the rise in gas prices and the improvement of drilling technology. Overall, the areas of greatest development are north and northwest of the BBNPP Site (outside of Columbia and Luzerne counties), as shown on Figures 1 and 2.

Records obtained from the Pennsylvania Department of Environmental Protection (PADEP), Bureau of Oil and Gas Management show that there has been no recent oil or gas drilling/development activity in Columbia County, and that only 10 wells have been drilled in Luzerne County (see Figure 3). Out of these 10 wells, only one is active. Thus, the potential to find oil or gas deposits of economic value are very low for the area immediately surrounding the BBNPP."

The counties where the alternative sites are located (Luzerne, Montour, and Northumberland), are outside the area of expected discovery of gas or oil.

Records obtained from the Pennsylvania Department of Environmental Protection, Bureau of Oil and Gas Management, show that there has been no recent oil or gas drilling/development activity in Luzerne, Montour, or Northumberland Counties, and that only 10 wells have been drilled in Luzerne County (see Figures 4, 5, and 6). Out of these 10 wells, only one is active. Thus, the potential to find oil or gas deposits of economic value are very low for the area immediately surrounding the BBNPP.

Data Sources:

Milici, R.C., and C.S. Swezey, 2006, "Assessment of Appalachian Basin Oil and Gas Resources: Devonian shale – Middle and Upper Paleozoic Total Petroleum System," U.S. Geological Survey, Open-File Report Series 2006-1237.

Sumi, L, 2008, "Shale Gas: Focus on the Marcellus Shale," Oil and Gas Accountability Project/Earthworks, Washington, D.C., May 2008.

COLA Impact:

No changes to the BBNPP COLA ER are required as a result of this Information Needs response.

Figure 1. Qualitative assessment of gas recoverability from Devonian shales of the Appalachian basin (from Milici and Swezey, 2006)

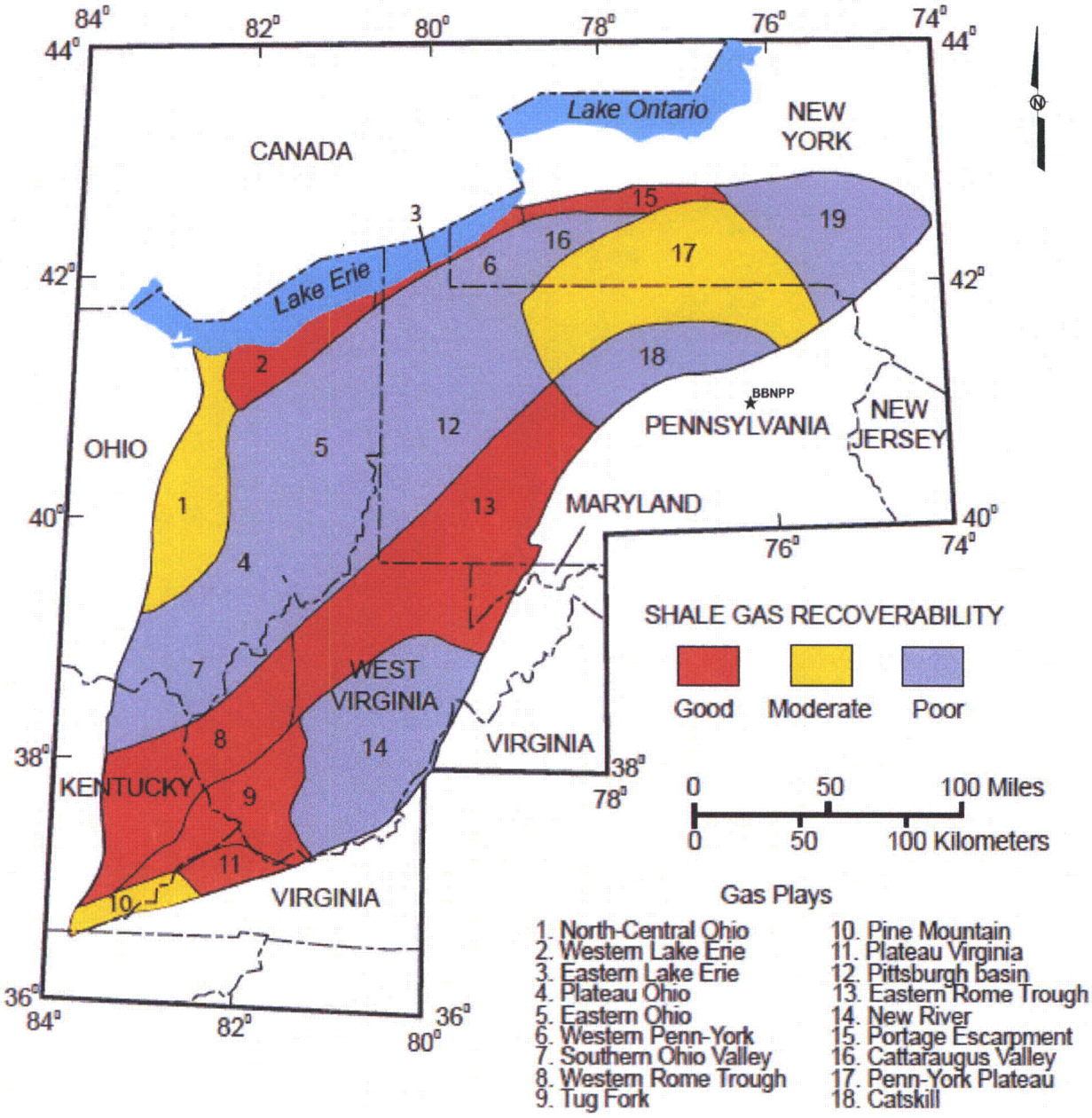


Figure 2. Northwestern Ohio Shale AU showing relationship of hydrocarbon accumulations to geologic structures (Milici and Swezey, 2006)

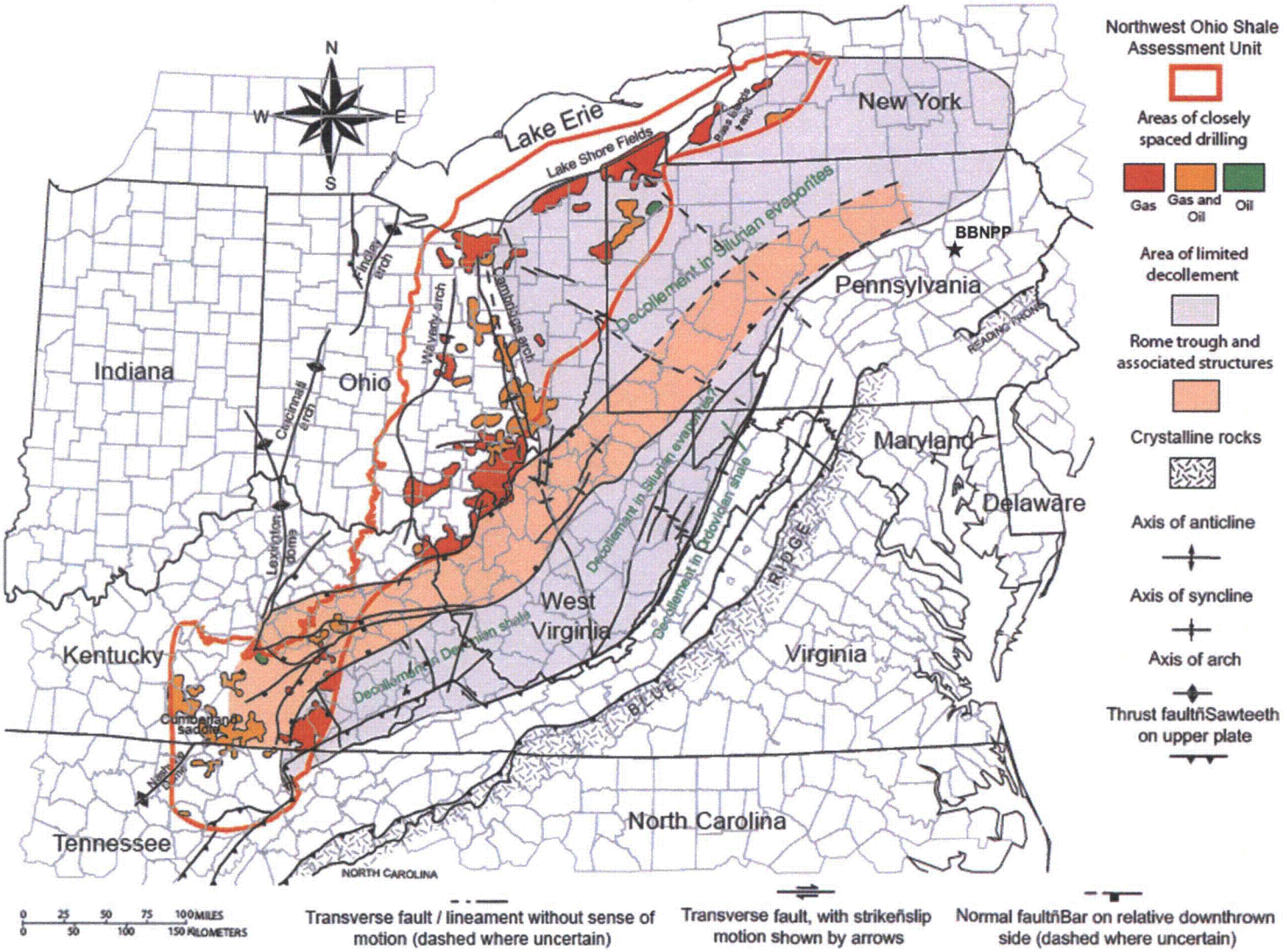
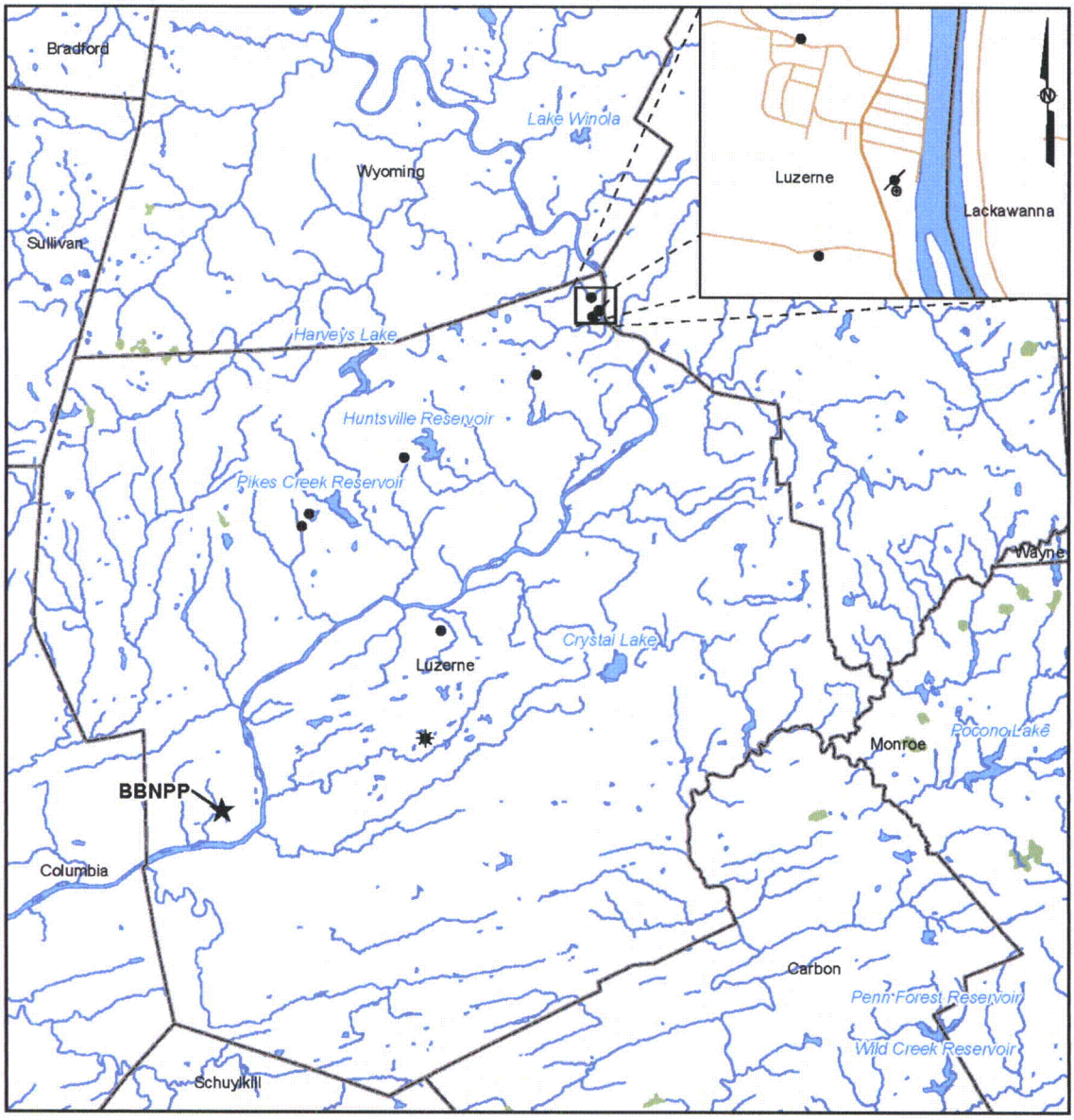


Figure 3. Oil and Gas Wells Identified in Luzerne County



LEGEND

★ Center Point of Bell Bend NPP (BBNPP)

Oil and Gas Well Locations (PADEP, 2008)

- Abandoned
- Active
- Inactive
- Proposed But Never Materialized
- County Boundary
- Streams and Rivers
- Waterbody

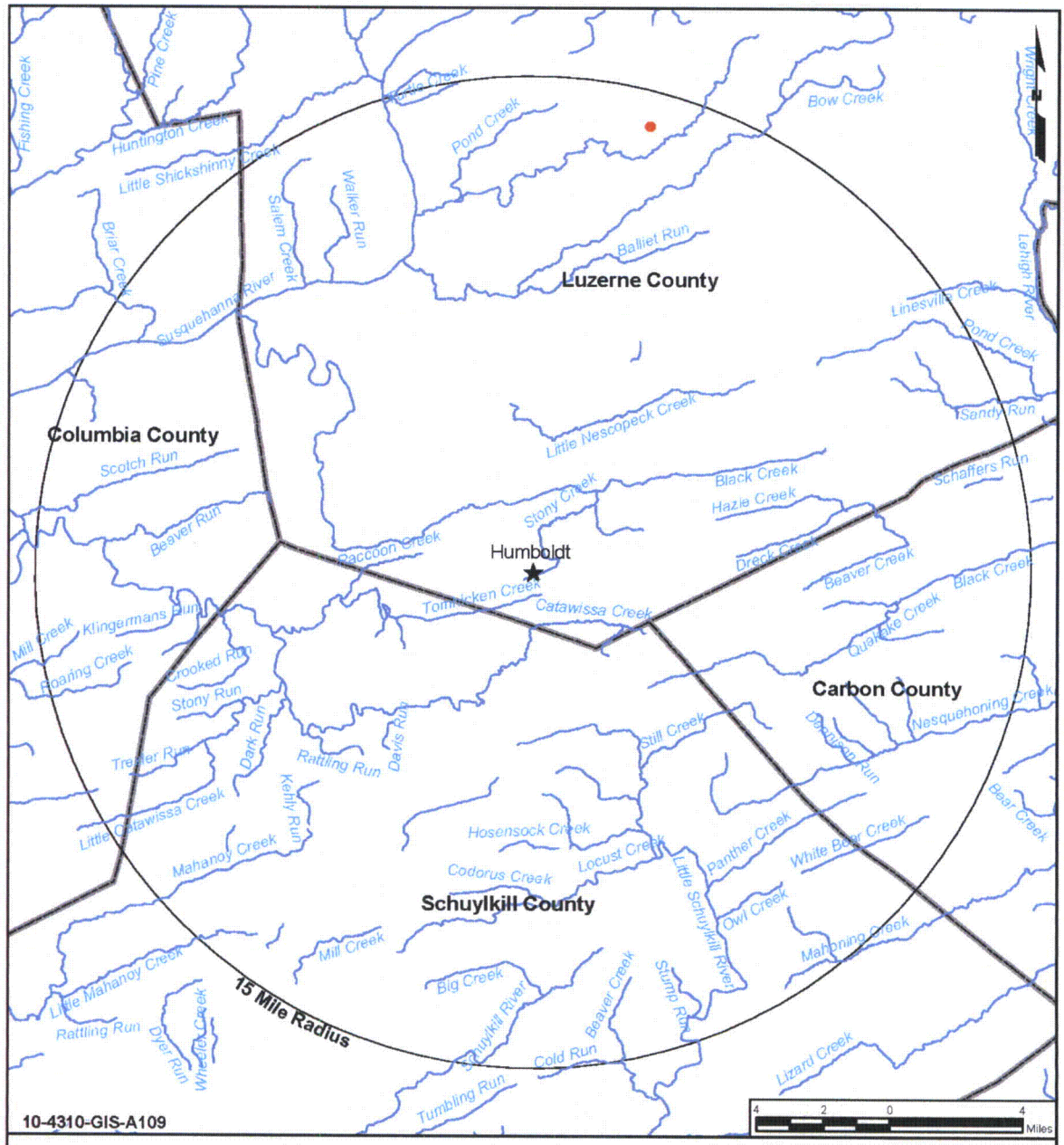
0 3 6 12 Miles

0 3 6 12 Kilometers

REFERENCES

- ESRI StreetMap Pro [CD-ROM], 2007, rivers, waterbodies, and county boundaries.
- Oil and Gas Locations from PASDA, published by PADEP. http://www.pasda.psu.edu/data/dep/ Downloaded April 6, 2009.

Figure 4. Oil and Gas Well Locations within 15-Mile Radius of Humboldt



Legend

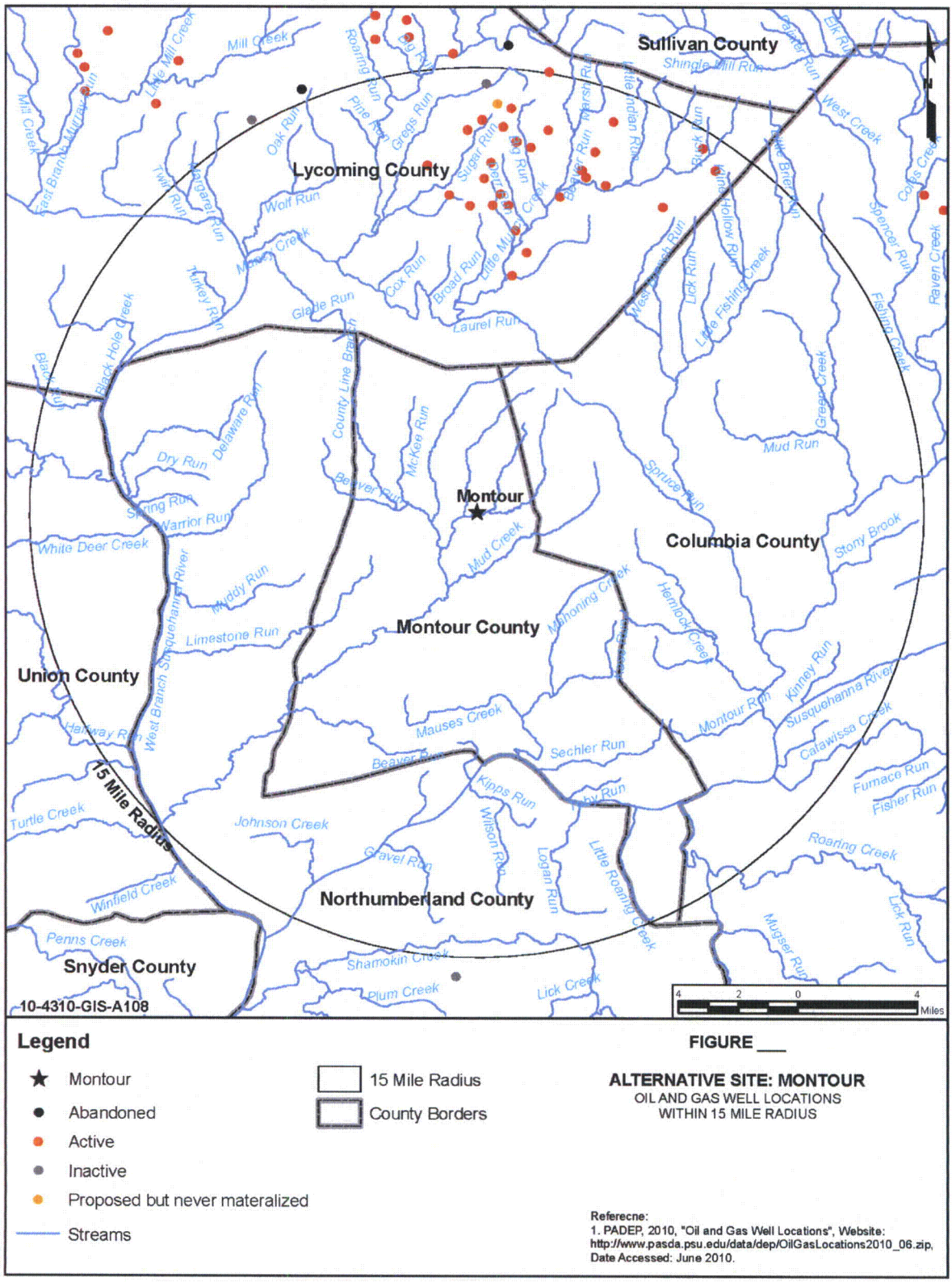
- ★ Humboldt
- ● Abandoned
- ● Active
- ● Inactive
- ● Proposed but never materalized
- Streams
- 15 Mile Radius
- County Borders

FIGURE __

ALTERNATIVE SITE: HUMBOLDT
OIL AND GAS WELL LOCATIONS
WITHIN 15 MILE RADIUS

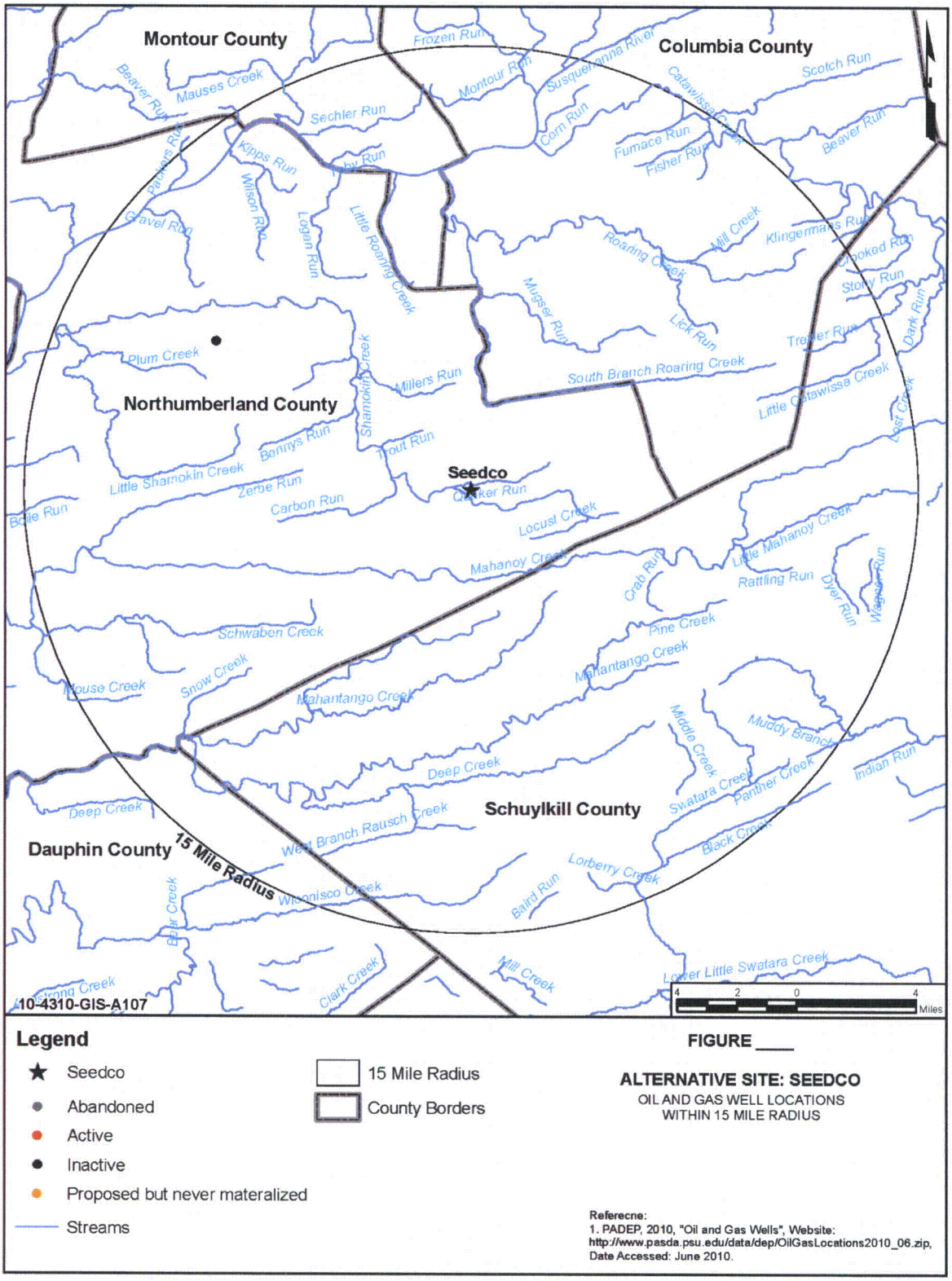
Referecne:
1. PADEP, 2010, "Oil and Gas Wells", Website: http://www.pasda.psu.edu/data/dep/OilGasLocations2010_06.zip, Date Accessed: June 2010.

Figure 5. Oil and Gas Well Locations within 15-Mile Radius of Montour



Referecne:
1. PADEP, 2010, "Oil and Gas Well Locations", Website: http://www.pasda.psu.edu/data/dep/OilGasLocations2010_06.zip, Date Accessed: June 2010.

Figure 6. Oil and Gas Well Locations within 15-Mile Radius of Seedco



Legend

- ★ Seedco
- Abandoned
- Active
- Inactive
- Proposed but never materalized
- Streams
- 15 Mile Radius
- County Borders

FIGURE ____

ALTERNATIVE SITE: SEEDCO

OIL AND GAS WELL LOCATIONS WITHIN 15 MILE RADIUS

Referecne:
1. PADEP, 2010, "Oil and Gas Wells", Website: http://www.pasda.psu.edu/data/dep/OilGasLocations2010_06.zip, Date Accessed: June 2010.

LU-12

ER Section 9.3.2.2

Information Needs Text: As provided in Table 9.3-12 – Comparison of Wetland and Waterway Impacts: BBNPP vs. Alternative Sites, provide an expert who can discuss the wetland and stream impacts for the new water line ROW at the Montour site. The Corps is aware that an established 12-mile ROW to the West Branch Susquehanna River already exists as part of the coal fired generation plant at Montour. This PPL owned, 12-mile ROW was recently established for the effluent associated with the newly installed scrubbers. Why weren't the estimated wetland and/or stream impacts based on using this established ROW?

Response: A subject matter expert will be available to discuss the wetland and stream impacts for the new water line right-of-way (ROW) at the Montour site as provided in ER Tables 9.3-12, 9.3-13, and 9.3-14. The conceptual water pipeline route for the Montour site is alongside the established 12-mile ROW from the Montour Coal Plant to the West Branch of the Susquehanna River, with the exception of the easternmost ~1/2 mile, which veers away from the established ROW to gain entry into the new Montour plant.

However, the existing PPL-owned 60-foot ROW cannot accommodate two additional 60" water pipelines, which would require the majority of the existing ROW regardless of the existing (smaller) water pipelines in place within the ROW. The existing ROW would either need to be expanded through purchase of additional ROW or a new ROW purchased near the existing ROW for the water pipelines from the proposed Montour site to the West Branch of the Susquehanna River.

As is visible on the large-scale routing plans provided in the electronic reading room, an active railroad ROW exists to the south/west of the existing water pipeline ROW. In many areas along the ROW, other constraints such as residential properties exist, preventing the expansion of the 60-foot ROW to accommodate the new water pipelines. Correspondingly, the proposed water pipeline ROW is currently routed parallel to the existing ROW, taking advantage of the specific routing analysis done for the Montour coal plant water line ROW.

An assumption is made that a parallel water line ROW would incur similar wetland and stream impacts as the existing ROW, though over a greater (80' to 120') width. It should also be noted that if it were possible to use the existing ROW, wetland and stream impacts would not be expected to be significantly less as compared to an adjacent ROW, since wetland and streams do exist (either restored or previously unimpacted) within the existing Montour coal plant water line ROW.

COLA Impact:

No changes to the BBNPP COLA ER are required as a result of this Information Needs response.

SE-9

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can estimate the total housing stock and vacancy rate for the 50-mile (80 km) Region of Interest around each site.

Response: A subject matter expert will be available to discuss the total housing stock and vacancy rate for the 50-mile (80 km) Region of Interest around each site.

According to the U.S. Census Bureau (USCB, 2000c), there were a total of 497,086 housing units within a 50-mi (80km) radius of the Montour site. Of that total, 130,160 housing units were vacant or not occupied (ER Section 9.3.2.2.6). A total of 542 housing units are vacant in Montour County.

Of the 1,022,818 housing units available within a 50-mi (80-km) radius of the Humboldt site (USCB, 2000e), a total of 156,777 housing units were vacant or not occupied (ER Section 9.3.2.3.6). A total of 13,999 housing units are vacant in Luzerne County.

There were a total of 901,714 housing units available within a 50-mi (80-km) radius of the Seedco site (USCB, 2000f), with a total of 125,072 of those units being vacant or not occupied (ER Section 9.3.2.4.6). A total of 4,329 housing units are vacant in Northumberland County.

Data Sources:

USCB, 2000c. Anthony Township, Website: http://www.census.gov/, Date accessed: October 14, 2009.

USCB, 2000e. Hazle Township, Website: http://www.census.gov/, Date accessed: October 14, 2009.

USCB, 2000f. Coal Township, Website: http://www.census.gov/, Date accessed: October 14, 2009.

COLA Impact:

BBNPP COLA ER Sections 9.3.2.2.6, 9.3.2.3.6, and 9.3.2.4.6 will be revised, as follows, in a future revision of the COLA:

9.3.2.2.6 Socioeconomics

Datasets from 2005 were reviewed to determine the number of housing units currently vacant within a 50-mi (80 km) radius of the Montour site. Based on this information, an assessment was made to determine if there would be adequate housing units available to address the influx of a workforce required to support the proposed new unit at the Montour site during its construction and operation. According to the U.S. Census Bureau (USCB, 2000c), there were a total of 497,086 housing units within a 50-mi (80km) radius of the Montour site. Of that total, ~~According to the data, a total of~~ 130,160 housing units are vacant or not occupied within a 50-mi (80 km) radius of the Montour site. A total of 542 housing units are vacant in Montour County. (ESRI, 2009c) Applying the 20 to 35 percent in-migration analysis and data from Tables 4.4-7 and 4.4-8 of the ER for BBNPP, an estimated 688 to 1,204 direct workers (households) would

in-migrate into the affected area. As a result the increase in housing demand in Montour County would be less than the existing availability of housing units within the 50-mi (80 km) radius.

9.3.2.3.6 Socioeconomics

Datasets from 2005 were reviewed to determine the number of housing units currently vacant within a 50-mi (80-km) radius of the Humboldt site. Based on this information, an assessment was made to determine if there appears to be adequate housing units available to address the influx of a workforce required to support the proposed new unit at the Humboldt site during its construction and operation. Of the 1,022,818 housing units available within a 50-mi (80-km) radius of the Humboldt site (USCB, 2000e), ~~According to the data,~~ a total of 156,777 housing units are vacant or not occupied within a 50-mi (80-km) radius of the Humboldt site. A total of 13,999 housing units are vacant in Luzerne County. (ESRI, 2009c) Applying the 20 to 35 percent in-migration analysis and data for the BBNPP from Tables 4.4-7 and 4.4-8, an estimated 688 to 1,204 direct workers (households) would migrate into the county. As a result, the increase in housing demand in Luzerne County would be less than the existing availability of housing units within the 50-mi (80-km) radius.

9.3.2.4.6 Socioeconomics

Datasets from 2005 were reviewed to determine the number of housing units currently vacant within a 50-mi (80 km) radius of the Seedco site. Based on this information, an assessment was made to determine if there appears to be adequate housing units available to address the influx of a workforce required to support the proposed new unit at the Seedco site during its construction and operation. According to the data, there were a total of 901,714 housing units available within a 50-mi (80-km) radius of the Seedco site (USCB, 2000f), with a total of 125,072 housing units ~~are~~ vacant or not occupied ~~within a 50-mi (80-km) radius of the Seedco site~~. A total of 4,329 housing units are vacant in Northumberland County. (ESRI, 2009c) Applying the 20 to 35 percent in-migration analysis and data for the BBNPP from Tables 4.4-7 and 4.4-8, an estimated 688 to 1,204 direct workers (households) would migrate into the county. As a result, the increase in housing demand in Northumberland County would be less than the existing availability of housing units within the 50-mi (80-km) radius.

TE-4

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert to discuss nesting grounds for any threatened or endangered species at the proposed and alternative sites, and the summary and conclusions describing the presence or absence of these sites as being an advantage of the Bell Bend site.

Response: A subject matter expert will be available to discuss nesting grounds for threatened and endangered species at the proposed and alternative sites, and the summary and conclusions describing the presence or absence of these sites as being an advantage of the Bell Bend site.

Upon re-evaluation of the summary and conclusions in ER Section 9.3.3 and because the USFWS has determined that the Bell Bend site contains habitat that is suitable for nesting by the endangered Indiana bat, the fourth bullet in ER Section 9.3.3 should be revised as follows:

- The BBNPP site contains suitable nesting habitat for the endangered Indiana bat. However, use of the site by Indiana bat maternity colonies has not been observed or documented. The *Alternative Sites* also contain forested areas that could provide suitable maternity colony habitat for the Indiana bat. Because all sites may contain suitable nesting habitat for the Indiana bat, and because this habitat can be removed while bats are hibernating and not present on the site, the impacts on spawning or nesting areas at the BBNPP site are no greater than impacts at the *Alternative Sites.*

This revision will be made in ER Section 9.3.3 during a future COLA revision.

COLA Impact:

BBNPP COLA ER Section 9.3.3 will be revised, as follows, in a future revision of the COLA:

9.3.3 Summary and Conclusions

The advantages of the BBNPP site over the *Alternative Sites* are summarized as follows:

- The postulated consumptive use of water by a new unit at the BBNPP site would be no greater than water use at the *Alternative Sites.*
- The impacts of development of a new unit at the *Proposed Site* on endangered species are no greater than impacts postulated for the *Alternative Sites.*
- No federal, state, or Native American tribal lands are affected by the *Proposed Site.*
- The BBNPP site contains suitable nesting habitat for the endangered Indiana bat. However, use of the site by Indiana bat maternity colonies has not been observed or documented. The *Alternative Sites* also contain forested areas that could provide suitable maternity colony habitat for the Indiana bat. Because all sites may contain suitable nesting habitat for the Indiana bat, and because this habitat can be removed while bats are hibernating and not present on the site, the impacts on spawning or nesting areas at the BBNPP site are no greater than impacts at the *Alternative Sites.*~~The BBNPP site does not contain any identified spawning and/or nesting grounds for any~~

~~threatened or endangered species. Thus the impacts on spawning or nesting areas are no greater than impacts at the *Alternative Sites*.~~