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October 7, 2010

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

**BELL BEND NUCLEAR POWER PLANT
PARTIAL RESPONSE TO
ENVIRONMENTAL REQUESTS FOR
ADDITIONAL INFORMATION
5022, 5024, 5033, & 5043 AND
SCHEDULE INFORMATION
BNP-2010-251 Docket No. 52-039**

- References:
- 1) S. Imboden (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend Env. - Final RAI EIS 5.11-7 (RAI No.5021)- Accidents, e-mail dated September 7, 2010
 - 2) S. Imboden (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend Env. - Final RAI EIS 9.3 (RAI No.5022)- Alternatives, e-mail dated September 9, 2010
 - 3) S. Imboden (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend Env. - Final RAI EIS 9.4-4 (RAI No.5023) - Hydro, e-mail dated September 7, 2010
 - 4) S. Imboden (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend Env. - Final RAI EIS 4.4-15 (RAI No.5024)- Socio, e-mail dated September 7, 2010
 - 5) S. Imboden (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend Env. - Final RAI EIS 5.4-3 (RAI No.5025)- Socio, e-mail dated September 7, 2010
 - 6) S. Imboden (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend Env. - USACE RAIs, e-mail dated August 20, 2010
 - 7) S. Imboden (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend Env. - Final RAI EIS 9.3 (RAI No.5033)- Aquatic, e-mail dated September 9, 2010
 - 8) S. Imboden (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend Env. - Final RAI EIS 9.3 (RAI No.5034)- Cultural, e-mail dated September 7, 2010
 - 9) S. Imboden (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend Env. - Final RAI EIS 9.3 (RAI No.5035)- General, e-mail dated September 7, 2010
 - 10) S. Imboden (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend Env. - Final RAI EIS 9.3 (RAI No.5036)- Hydro, e-mail dated September 7, 2010
 - 11) S. Imboden (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend Env. - Final RAI EIS 9.3 (RAI No.5042)- Land Use, e-mail dated September 8, 2010
 - 12) S. Imboden (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend Env. - Final RAI EIS 9.3 (RAI No.5043)- Terrestrial, e-mail dated September 8, 2010

The purpose of this letter is to respond to several requests for additional information (RAIs) identified in the referenced NRC correspondence to PPL Bell Bend, LLC (References 2, 4, 7, and 12). These RAIs address Socioeconomics and Alternative Sites, as discussed in Sections 4.4 and 9.3 of the Environmental Report (ER), as submitted in Part 3 of the Bell Bend Nuclear Power Plant Combined License Application (COLA).

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The enclosure provides our responses to the following RAI Questions:

- RAI 5022 EIS 9.3-13
- RAI 5022 EIS 9.3-16
- RAI 5024 EIS 4.4-15
- RAI 5033 EIS 9.3-37
- RAI 5033 EIS 9.3-40
- RAI 5043 EIS 9.3-49

These responses include revised COLA content. This future revision of the COLA is a new regulatory commitment. The revised COLA content in the enclosure is shown against the version of ER Section 9.3 that was submitted in November 2009 (BNP-2009-371).

In addition, this letter provides a near-term submittal schedule for additional RAI Questions included in References 1, 2, 3, 5, 6, & 10, as follows:

- October 19, 2010 – 5021 EIS 5.11-7; 5022 EIS 9.3-18; 5022 EIS 9.3-15; 5022 EIS 9.3-19a; 5036 EIS 9.3-32; 5036 EIS 9.3-33; 5026 EIS USACE-16;
- November 11, 2011 – 5022 EIS 9.3-19b; 5022 EIS 9.3-20; 5023 EIS 9.4-4; 5036 EIS 9.3-30
- November 22, 2011 – 5025 EIS 5.4-3; 5022 EIS 9.3-14; 5035 EIS 9.3-28

The remaining RAIs included in References 2, 6, 7, 8, 10, 11, & 12 will be submitted on or before the January 25, 2011, supplement of ER Section 9.3.

Should you have questions or need additional information, please contact the undersigned at 570.802.8102.

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

Executed on October 7, 2010

Respectfully,



Rocco R. Sgarro

RRS/kw

Enclosure: As stated

cc: Ms. Paula Ballaron
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Enclosure

Responses to Environmental Requests for Additional Information

No. 5022 EIS 9.3-13 & EIS 9.3-16

No. 5024 EIS 4.4-15

No. 5033 EIS 9.3-37 & EIS 9.3-40

No. 5043 EIS 9.3-49

Bell Bend Nuclear Power Plant

RAI No. 5022 EIS 9.3-13

Summary: *This RAI is related to the second alternative sites audit information need ALT-12.*

Clarification is needed for ASER Appendix A, Criterion 5e. Given the workforce size, please justify why it takes more than 1,000 schools, or even 250 schools, to meet the need of the construction work force. Additionally, please address why the current capacity of nearby schools to accept new students was not considered.

Full Text (Supporting Information): None.

Response:

The scoring basis for Criterion 5e in the Alternative Site Evaluation Report (ASER) was established to identify the range of probabilities for schools to have the capacity to meet the needs of the construction and operation workforce. The reconnaissance-level evaluation did not include the assessment of current capacity of schools within the area because this information is not readily available at the reconnaissance level; therefore, the evaluation assumed that the greater number of schools in the area would increase the probability of having the capacity to meet the needs of an increase of population within the site area. For the reconnaissance-level evaluation of the alternative sites, readily available information pertaining to the identification/number of schools within a 50-mile radius of the site was used to initially evaluate Criterion 5e. The 50-mile radius was chosen to correspond to the same search radius used for the identification of vacant housing for the construction and operation workforce. The distance of the specific schools from the sites was not included in the evaluation.

In accordance with NUREG-1555, Section 9.3, "[t]he reviewer will use information regarding the environmental impacts of the proposed action at the proposed site that were developed in Chapters 4.0 and 5.0, and the reconnaissance level information available for the alternative sites, to perform an independent comparison of the proposed and alternative sites." (NRC, 2007)

However, to address the NRC's concern identified in this RAI, PPL's Delphi Panel for the BBNPP Alternative Sites Evaluation re-evaluated Criterion 5e. After considering re-evaluation of Criterion 5e based on the number of schools within the host county, but rejecting this option due to the different county sizes and location of some sites near the border of a county, the panel decided to re-evaluate Criterion 5e based on the number of schools within a 25-mile radius of each candidate site. The 25-mile radius was considered a reasonably short commute for most workers and allowed for a consistent evaluation metric across all sites while at the same time being responsive to the NRC's concern.

According to Chapter 4 of the Bell Bend Nuclear Power Plant Environmental Report (ER) (UniStar Nuclear, 2010), which provides a detailed evaluation of the impacts at the proposed site (BBNPP), an estimated workforce of 3,950 employees would be needed during construction of the facility. The evaluation assumed a similar workforce would be needed at each alternative site. A range of in-migration between 20 and 35 percent, consistent with ER Section 4.4.2.1 was also assumed, which included the assumption that the peak construction workforce would bring their families with them for the duration of construction.

Assuming in-migration of the entire direct and indirect construction workforce with 0.48 children per household (see Section 4.4.2.8), an estimated 533 to 933 children would in-migrate into the

region of influence. Using the same assumptions, the estimated number of children in-migrating with the entire direct and indirect operational workforce would be considerably lower. A total of 533 to 933 in-migrating children would represent a very small percentage of the total enrollment of (and resulting impacts on) 150 or more schools within a 25-mile radius within the region of interest (less than approximately 1.5% of the total school enrollment for the in-migrating construction workforce and approximately 0.5% of the total school enrollment for the in-migrating operational workforce school age children). As the number of schools decreases and the total enrollment for the schools within the 25-mile radius decreases, the additional in-migration of school aged children would be more difficult to absorb.

The following revised scoring basis was developed for the re-evaluation of Criterion 5e and will be incorporated into Appendix A of the ASER and Table 9.3-8 of the ER during a future revision of these documents:

Ranking Criteria	Metric	Scoring Basis
5e. Schools SCORED USING SCREENING DATA	Availability of existing schools to support increased construction and operation workforce	<p>5 = Greater than or equal to 150 public and/or private high, middle, and elementary schools within a 25-mi (40 km) radius the site</p> <p>4 = > or equal to 100 to < 150 public and/or private high, middle, and elementary schools within a 25-mi (40 km) radius the site</p> <p>3 = > or equal to 50 to < 100 public and/or private high, middle, and elementary schools within a 25-mi (40 km) radius the site</p> <p>2 = > or equal to 25 to < 50 public and/or private high, middle, and elementary schools within a 25-mi (40 km) radius the site</p> <p>1 = Less than 25 public and/or private high, middle, and elementary schools) within a 25-mi (40 km) radius the site</p>

Based on reconnaissance level data from the Federal Emergency Management Agency (FEMA), the total number of schools within a 25-mile radius (and total enrollment in those schools), and revised scores for each of the alternative sites is provided below.

Alternative Site Name (State)	No. of Schools Within a 25-mile Radius of the Site	Total Enrollment	Proposed Revised Criterion 5e Score
BBNPP (PA) ¹	164	66,440	5
Humboldt (PA)	165	68,547	5
Montour (PA)	143	48,895	4

Alternative Site Name (State)	No. of Schools Within a 25-mile Radius of the Site	Total Enrollment	Proposed Revised Criterion 5e Score
Seedco (PA)	140	49,023	4

Note that the ER Chapter 4 evaluation of school data for BBNPP was based on in-migration into a two county area and used a different data source so the numbers presented are different than in ER Chapter 4.

The revised scores provided will be incorporated into the next revision of the ASER for Criterion 5e in Tables 6-1 and 7-1 and Appendix C and in Table 9.3-10 of the ER.

Data Sources:

NRC, 2007. Standard Review Plans for Environmental Reviews for Nuclear Power Plants (NUREG 1555), Draft Revision 1, U.S. Nuclear Regulatory Commission, July.

UniStar Nuclear, 2010. Bell Bend Nuclear Power Plant, Combined License Application, Part 3, Environmental Report, *Chapter 4: Environmental Impacts of Construction*, Revision 2, February.

COLA Impact:

BBNPP COLA ER Section 9.3.2.2.6, third paragraph, will be revised, as follows, in a future revision of the COLA:

There are approximately 143427 public and private elementary, middle, and high schools located within a 2550 mi (4080 km) radius of the Montour site. (FEMA, 2007)

BBNPP COLA ER Section 9.3.2.3.6, third paragraph, will be revised, as follows, in a future revision of the COLA:

There are approximately 165869 public and private elementary, middle, and high schools located within a 2550-mi (4080-km) radius of the Humboldt site (FEMA, 2007).

BBNPP COLA ER Section 9.3.2.4.6, third paragraph, will be revised, as follows, in a future revision of the COLA:

There are approximately 140869 public and private elementary, middle, and high schools located within a 2550-mi (4080-km) radius of the Seedco site (FEMA, 2007).

BBNPP COLA ER Table 9.3-8 will be revised, as follows, in a future revision of the COLA:

Ranking Criteria	Metric	Scoring Basis
5e. Schools SCORED BY EXPERT PANEL USING SCREENING DATA	Availability of existing schools to support increased construction and operation workforce	5 = Greater than <u>or equal to</u> <u>1504,000</u> public and/or private high, middle, and elementary schools within a <u>5025</u> -mi (<u>8040</u> km) radius the site 4 = <u>> or equal to 100754</u> to <u>< 1504,000</u> public and/or private high, middle, and elementary schools within a <u>5025</u> -mi (<u>8040</u> km) radius the site

		<p>3 = <u>> or equal to 50-504</u> to <u>< 100</u> <u>750</u> public and/or private high, middle, and elementary schools within a <u>5025</u>-mi (<u>8040</u> km) radius the site</p> <p>2 = <u>> or equal to 25-254</u> to <u>< 50</u> <u>500</u> public and/or private high, middle, and elementary schools within a <u>5025</u>-mi (<u>8040</u> km) radius the site</p> <p>1 = <u>Less than or equal to 25-250</u> public and/or private high, middle, and elementary schools) within a <u>5025</u>-mi (<u>8040</u> km) radius the site</p>
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BBNPP COLA ER Table 9.3-10 will be revised, as follows, in a future revision of the COLA:

Table 9.3-10 Weighted Scoring of Candidate Sites

	BBNPP	Bainbridge	Conowingo	Humboldt	Martins Creek	Montour	Peach Bottom	Seedco	Wallenpaupack	Indian River
1. Land Use	23.34	14.80	18.00	19.58	20.12	20.93	14.54	21.47	8.93	17.74
2. Hydrology	39.00	42.00	42.00	39.00	39.00	39.00	39.00	39.00	39.00	30.00
3. Terrestrial Resources	31.50	17.50	17.50	35.00	35.00	31.50	17.50	31.50	21.00	35.00
4. Aquatic Biological Resources	28.00	7.00	7.00	28.00	14.00	28.00	14.00	28.00	28.00	21.00
5. Socioeconomics	16.50 18.70	22.00 23.10	22.00 23.10	22.00 23.10	23.10	13.20 15.40	20.90	22.00	15.40 16.50	15.40 17.60
6. Environmental Justice	22.50	17.50	20.00	22.50	22.50	22.50	20.00	5.00	17.50	12.50
7. Historical and Cultural Resources	20.00	5.00	5.00	20.00	15.00	20.00	10.00	20.00	20.00	15.00
8. Air Quality	20.00	14.00	14.00	20.00	16.00	20.00	16.00	20.00	20.00	14.00
9. Human Health	18.00	8.00	16.00	16.00	6.00	18.00	14.00	14.00	14.00	18.00
10. Postulated Accidents	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
11. Transport of Radioactive Material	3.00	3.00	6.00	3.00	3.00	6.00	6.00	3.00	6.00	6.00
12. Transmission Corridors	38.24	32.00	32.00	24.00	24.00	16.00	32.00	24.00	16.00	16.00
13. Population	31.50	27.00	31.50	36.00	18.00	36.00	31.50	40.50	40.50	40.50
14. Facility costs	16.20	27.20	8.25	16.50	13.75	8.55	17.71	16.50	16.20	15.13
15. Geology	28.00	28.00	31.50	29.75	19.25	33.25	33.25	26.25	28.00	28.00
16. Wetlands	29.33	40.00	34.67	34.67	40.00	40.00	40.00	40.00	34.67	18.67
Total:	370.13 72.3	310.03 11.1	310.43 11.5	371.03 72.1	313.7	357.93 60.1	331.4	356.2	330.23 31.3	307.93 10.1

Notes:

The scoring for the *Proposed Site* (BBNPP) is not required when ranking the *Candidate Sites* to select the *Alternative Sites* but is included here for reference.

ASER Impact:

BBNPP ASER Appendix A will be revised, as follows, in a future revision of the ASER:

Ranking Criteria	Metric	Scoring Basis
5e. Schools SCORED BY EXPERT PANEL USING SCREENING DATA	Availability of existing schools to support increased construction and operation workforce	<p>5 = Greater than <u>or equal to</u> 1501,000 public and/or private high, middle, and elementary schools within a 5025-mi (8040 km) radius the site</p> <p>4 = <u>> or equal to 100</u>754 to <u>< 150</u>1,000 public and/or private high, middle, and elementary schools within a 5025-mi (8040 km) radius the site</p> <p>3 = <u>> or equal to 50</u>504 to <u>< 100</u>750 public and/or private high, middle, and elementary schools within a 5025-mi (8040 km) radius the site</p> <p>2 = <u>> or equal to 25</u>254 to <u>< 50</u>500 public and/or private high, middle, and elementary schools within a 5025-mi (8040 km) radius the site</p> <p>1 = Less than or equal to <u>25</u>250 public and/or private high, middle, and elementary schools) within a 5025-mi (8040 km) radius the site</p>

BBNPP ASER Table 6-1 will be revised, as follows, in a future revision of the ASER:

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Bainbridge		Conowingo		Humboldt		Martins Creek (NJ)		Montour	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
1. Land use, including availability, and areas requiring special consideration	6.33	2.47	14.80	3.00	18.00	3.26	19.58	3.35	20.12	3.49	20.93
1a. Land Area and Existing Facilities: Ability to support the combined EPR footprint including the protected area, cooling towers, ponds, switchyard, construction support areas		4.78		3.00		3.44		5.00		4.78	
1b. Special Areas: Hazardous waste or spoils areas		1.89		5.00		3.44		3.44		3.89	
1c. Zoning		1.22		5.00		5.00		5.00		1.44	
1d. Distance to dedicated land		3.00		1.00		3.00		1.00		5.00	
1e. Topography		1.44		1.00		1.44		2.33		2.33	
2. Hydrology, water quality, and water availability	9.0	4.67	42.00	4.67	42.00	4.33	39.00	4.33	39.00	4.33	39.00
2a. Water Quality (chemistry)		4.00		4.00		5.00		5.00		5.00	
2b. Receiving Body Water Quality		5.00		5.00		3.00		3.00		3.00	
2c. Volume		5.00		5.00		5.00		5.00		5.00	
3. Terrestrial resources (including endangered species)	7.28	2.50	17.50	2.50	17.50	5.00	35.00	5.00	35.00	4.50	31.50
3a. Endangered/threatened habitats		1.00		1.00		5.00		5.00		5.00	
3b. Floodplains		4.00		4.00		5.00		5.00		4.00	
4. Aquatic biological resources (including endangered species)	7.28	1.00	7.00	1.00	7.00	4.00	28.00	2.00	14.00	4.00	28.00
4a. Endangered/threatened habitats		1.00		1.00		5.00		1.00		5.00	
4b. Thermal Discharge Sensitivity		1.00		1.00		3.00		3.00		3.00	
5. Socioeconomics (including aesthetics, demography, and infrastructure)	5.50	4.00	22.00	4.00	22.00	4.00	22.00	4.20	23.10	2.40	13.20
5a. Emergency services		5.00		5.00		5.00		5.00		3.00	
5b. Construction traffic		5.00		5.00		5.00		3.00		3.00	
5c. Construction workforce		5.00		5.00		5.00		5.00		3.00	
5d. Housing and necessities		1.00		1.00		1.00		3.00		1.00	
5e. Schools		4.00		4.00		4.00		5.00		2.00	
6. Environmental Justice	4.72	3.50	17.50	4.00	20.00	4.50	22.50	4.50	22.50	4.50	22.50
6a. Minority population		3.00		4.00		5.00		5.00		5.00	
6b. Low-income population		4.00		4.00		4.00		4.00		4.00	
7. Historic and Cultural Resources	4.94	1.00	5.00	1.00	5.00	4.00	20.00	3.00	15.00	4.00	20.00
7a. Historic properties		1.00		1.00		3.00		3.00		3.00	
7b. Historic districts		1.00		1.00		5.00		3.00		5.00	

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Bainbridge		Conowingo		Humboldt		Martins Creek (NJ)		Montour	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
8. Air Quality	4.00	3.50	14.00	3.50	14.00	5.00	20.00	4.00	16.00	5.00	20.00
8a. Climate and Meteorology: Weather risks/conditions		4.00		4.00		5.00		5.00		5.00	
8b. Class 1 Areas, Attainment / non-attainment Area		3.00		3.00		5.00		3.00		5.00	
9. Human Health	6.06	1.33	8.00	2.67	16.00	2.67	16.00	1.00	6.00	3.00	18.00
9a. Emergency preparedness program– proximity of residences/businesses for exclusion zone		1.00		3.00		1.00		1.00		3.00	
9b. Radiological pathways – water		2.00		4.00		4.00		1.00		5.00	
9c. Radiological pathways - food		1.00		1.00		3.00		1.00		1.00	
10. Postulated Accidents(a)	4.56	1.00	5.00	1.00	5.00	1.00	5.00	1.00	5.00	1.00	5.00
10a. Distance to Nearby Potential Hazards [per definition of Reg Guide 4.7]		1.00		1.00		1.00		1.00		1.00	
11. Transport of Radioactive Material (a)	3.00	1.00	3.00	2.00	6.00	1.00	3.00	1.00	3.00	2.00	6.00
11a. Operations/ Transportation: Support/challenges to transport of nuclear fuel and wastes		1.00		2.00		1.00		1.00		2.00	
12. Transmission corridors (land used, feasibility, and resources affected)	7.72	4.00	32.00	4.00	32.00	3.00	24.00	3.00	24.00	2.00	16.00
12a. Environmental impact of Proposed Transmission Interconnection		4.00		4.00		3.00		3.00		2.00	
13. Population distribution and density	8.67	3.00	27.00	3.50	31.50	4.00	36.00	2.00	18.00	4.00	36.00
13a. Distance to Population Centers		4.00		4.00		5.00		2.00		4.00	
13b. Population Density		2.00		3.00		3.00		2.00		4.00	
14. Facility costs	5.50	4.95	27.20	1.50	8.25	3.00	16.50	2.50	13.75	1.56	8.55
14a. Transportation: Barge access and capacity – distance, construction, or upgrade requirements		5.00		1.89		1.00		1.00		1.00	
14b. Transportation: Rail line access and capacity – distance, spur requirements, line capacity, or upgrade requirements		4.89		1.11		5.00		4.00		2.11	
15. Geology/Seismology	7.11	4.00	28.00	4.50	31.50	4.25	29.75	2.75	19.25	4.75	33.25
15a. Geology/ Seismology: Vibratory ground motion – seismic peak ground acceleration		5.00		5.00		5.00		4.00		5.00	
15b. Geology/Seismology: Depth to bedrock, soil stability, and compaction		3.00		5.00		5.00		1.00		5.00	
15c. Geology/Seismology: Surface faulting and deformations		5.00		5.00		5.00		5.00		5.00	
15d. Geology/Seismology: Other geological hazards		3.00		3.00		2.00		1.00		4.00	
16. Wetlands	8.33	5.00	40.00	4.33	34.67	4.33	34.67	5.00	40.00	5.00	40.00
16a. Total wetlands		5.00		5.00		5.00		5.00		5.00	
16b. Wetlands Component of Site		5.00		3.00		3.00		5.00		5.00	
16c. High Quality Wetlands		5.00		5.00		5.00		5.00		5.00	

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Bainbridge		Conowingo		Humboldt		Martins Creek (NJ)		Montour	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
Total			340.0311.1		340.4311.5		374.0372.1		313.7		357.0360.1
Alternative Site? (Yes/No) ²		NO		NO		YES		NO		YES	

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Peach Bottom		Seedco		Wallenpaupack		Indian River	
		Score	Wt.	Score	Wt.	Score	Wt.	Score	Wt.
1. Land use, including availability, and areas requiring special consideration	6.33	2.42	14.54	3.58	21.47	1.49	8.93	2.96	17.74
1a. Land Area and Existing Facilities: Ability to support the combined EPR footprint including the protected area, cooling towers, ponds, switchyard, construction support areas		3.89		4.11		1.22		2.33	
1b. Special Areas: Hazardous waste or spoils areas		4.56		3.22		3.22		2.78	
1c. Zoning		1.67		5.00		1.00		5.00	
1d. Distance to dedicated land		1.00		4.56		1.00		1.00	
1e. Topography		1.00		1.00		1.00		3.67	
2. Hydrology, water quality, and water availability	9.0	4.33	39.00	4.33	39.00	4.33	39.00	3.33	30.00
2a. Water Quality (chemistry)		5.00		5.00		5.00		2.00	
2b. Receiving Body Water Quality		3.00		3.00		3.00		5.00	
2c. Volume		5.00		5.00		5.00		3.00	
3. Terrestrial resources (including endangered species)	7.28	2.50	17.50	4.50	31.50	3.00	21.00	5.00	35.00
3a. Endangered/threatened habitats		1.00		5.00		1.00		5.00	
3b. Floodplains		4.00		4.00		5.00		5.00	
4. Aquatic biological resources (including endangered species)	7.28	2.00	14.00	4.00	28.00	4.00	28.00	3.00	21.00
4a. Endangered/threatened habitats		1.00		5.00		5.00		5.00	
4b. Thermal Discharge Sensitivity		3.00		3.00		3.00		1.00	
5. Socioeconomics (including aesthetics, demography, and infrastructure)	5.50	3.80	20.90	4.00	22.00	2.80	15.40	2.80	15.40
5a. Emergency services		5.00		5.00		1.00		5.00	
5b. Construction traffic		3.00		5.00		5.00		3.00	
5c. Construction workforce		5.00		5.00		5.00		3.00	
5d. Housing and necessities		1.00		1.00		1.00		1.00	
5e. Schools		5.00		4.00		2.00		2.00	
6. Environmental Justice	4.72	4.00	20.00	1.00	5.00	3.50	17.50	2.50	12.50
6a. Minority population		5.00		1.00		4.00		1.00	
6b. Low-income population		3.00		1.00		3.00		4.00	
7. Historic and Cultural Resources	4.94	2.00	10.00	4.00	20.00	4.00	20.00	3.00	15.00
7a. Historic properties		3.00		3.00		3.00		1.00	
7b. Historic districts		1.00		5.00		5.00		5.00	

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Peach Bottom		Seedco		Wallenpaupack		Indian River	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
8. Air Quality	4.00	4.00	16.00	5.00	20.00	5.00	20.00	3.50	14.00
8a. Climate and Meteorology: Weather risks/conditions		5.00		5.00		5.00		4.00	
8b. Class 1 Areas, Attainment / non-attainment Area		3.00		5.00		5.00		3.00	
9. Human Health	6.06	2.33	14.00	2.33	14.00	2.33	14.00	3.00	18.00
9a. Emergency preparedness program– proximity of residences/businesses for exclusion zone		1.00		1.00		1.00		3.00	
9b. Radiological pathways – water		5.00		3.00		5.00		5.00	
9c. Radiological pathways – food		1.00		3.00		1.00		1.00	
10. Postulated Accidents(a)	4.56	1.00	5.00	1.00	5.00	1.00	5.00	1.00	5.00
10a. Distance to nearby potential hazards [per definition of Reg Guide 4.7]		1.00		1.00		1.00		1.00	
11. Transport of Radioactive Material (a)	3.00	2.00	6.00	1.00	3.00	2.00	6.00	2.00	6.00
11a. Operations/ Transportation: Support/challenges to transport of nuclear fuel and wastes		2.00		1.00		2.00		2.00	
12. Transmission corridors (land used, feasibility, and resources affected)	7.72	4.00	32.00	3.00	24.00	2.00	16.00	2.00	16.00
12a. Environmental impact of proposed transmission interconnection		4.00		3.00		2.00		2.00	
13. Population distribution and density	8.67	3.50	31.50	4.50	40.50	4.50	40.50	4.50	40.50
13a. Distance to population centers		4.00		5.00		5.00		5.00	
13b. Population density		3.00		4.00		4.00		4.00	
14. Facility costs	5.50	3.22	17.71	3.00	16.50	2.95	16.20	2.75	15.13
14a. Transportation: Barge access and capacity – distance, construction, or upgrade requirements		5.00		1.00		1.00		1.00	
14b. Transportation: Rail line access and capacity – distance, spur requirements, line capacity, or upgrade requirements		1.44		5.00		4.89		4.50	
15. Geology/Seismology	7.11	4.75	33.25	3.75	26.25	4.00	28.00	4.00	28.00
15a. Geology/ Seismology: Vibratory ground motion – seismic peak ground acceleration		5.00		5.00		5.00		5.00	
15b. Geology/Seismology: Depth to bedrock, soil stability, and compaction		5.00		3.00		3.00		1.00	
15c. Geology/Seismology: Surface faulting and deformations		5.00		5.00		5.00		5.00	
15d. Geology/Seismology: Other geological hazards		4.00		2.00		3.00		5.00	
16. Wetlands	8.33	5.00	40.00	5.00	40.00	4.33	34.67	2.33	18.67
16a. Total wetlands		5.00		5.00		5.00		5.00	
16b. Wetlands Component of Site		5.00		5.00		3.00		1.00	
16c. High Quality Wetlands		5.00		5.00		5.00		1.00	

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Peach Bottom		Seedco		Wallenpaupack		Indian River	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
Total			331.4		356.2		330.2331.3		307.9310.1
Alternative Site? (Yes/No) ²		NO		YES		NO		NO	

BBNPP ASER Table 7-1 will be revised, as follows, in a future revision of the ASER:

Table 7-1
Evaluation for "Environmentally Preferred"

Criteria ¹	Weight	BBNPP		Humboldt		Montour		Seedco	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
1. Land use, including availability, and areas requiring special consideration	6.33	3.89	23.34	3.26	19.58	3.49	20.93	3.58	21.47
1a. Land Area and Existing Facilities: Ability to support the combined EPR footprint including the protected area, cooling towers, ponds, switchyard, construction support areas		5.00							
1b. Special Areas: Hazardous waste or spoils areas		4.78							
1c. Zoning		3.67							
1d. Distance to Dedicated Land		3.00							
1e. Topography		3.00							
2. Hydrology, water quality, and water availability	9.00	4.33	39.00	4.33	39.00	4.33	39.00	4.33	39.00
2a. Water Quality (chemistry)		5.00							
2b. Receiving Body Water Quality		3.00							
2c. Volume		5.00							
3. Terrestrial resources (including endangered species)	7.28	4.50	31.50	5.00	35.00	4.50	31.50	4.50	31.50
3a. Endangered/Threatened Habitats		5.00							
3b. Floodplains		4.00							
4. Aquatic biological resources (including endangered species)	7.28	4.00	28.00	4.00	28.00	4.00	28.00	4.00	28.00
4a. Endangered/Threatened Habitats		5.00							
4b Thermal Discharge Sensitivity		3.00							
5. Socioeconomics (including aesthetics, demography, and infrastructure)	5.50	3.00	16.50	4.00	22.00	2.80	15.40	4.00	22.00
5a. Emergency services		5.00							
5b. Construction Traffic		3.00							
5c. Construction Workforce		3.00							
5d. Housing and Necessities		1.00							
5e. Schools		3.00							
6. Environmental Justice	4.72	4.50	22.50	4.50	22.50	4.50	22.50	1.00	5.00
6a. Minority Population		5.00							
6b. Low-income Population		4.00							
7. Historic and Cultural Resources	4.94	4.00	20.00	4.00	20.00	4.00	20.00	4.00	20.00
7a. Historic Properties		3.00							
7b. Historic Districts		5.00							
8. Air Quality	4.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	20.00

Table 7-1
Evaluation for "Environmentally Preferred"

Criteria ¹	Weight	BBNPP		Humboldt		Montour		Seedco	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
8a. Climate and Meteorology: Weather risks/conditions		5.00							
8b. Class 1 Areas, Attainment / non-attainment Area		5.00							
9. Human Health	6.06	3.00	18.00	2.67	16.00	3.00	18.00	2.33	14.00
9a. Emergency preparedness program—proximity of residences/businesses for exclusion zone		3.00							
9b. Radiological pathways – water		5.00							
9c. Radiological pathways – food		1.00							
10. Postulated Accidents(a)	4.56	1.00	5.00	1.00	5.00	1.00	5.00	1.00	5.00
10a. Distance to Nearby Potential Hazards [per definition of Reg Guide 4.7]		1.00							
11. Fuel Cycle Impacts(a)	3.00	1.00	3.00	1.00	3.00	2.00	6.00	1.00	3.00
11a. Operations/ Transportation: Support/challenges to transport of nuclear fuel and wastes		1.00							
12. Transmission corridors (land used, feasibility, and resources affected)	7.72	4.78	38.24	3.00	24.00	2.00	16.00	3.00	24.00
12a. Environmental impact of proposed transmission interconnection		4.78							
13. Population distribution and density	8.67	3.50	31.50	4.00	36.00	4.00	36.00	4.50	40.50
13a. Distance to population centers		4.00							
13b. Population density		3.00							
14. Facility costs (environmental)	5.50	2.95	16.20	3.00	16.50	1.56	8.55	3.00	16.50
14a. Transportation: Barge access and capacity – distance, construction, or upgrade requirements		1.00							
14b. Transportation: Rail line access and capacity – distance, spur requirements, line capacity, or upgrade requirements		4.89							
15. Geology/Seismology	7.11	4.00	28.00	4.25	29.75	4.75	33.25	3.75	26.25
15a. Geology/ Seismology: Vibratory ground motion – seismic peak ground acceleration		5.00							
15b. Geology/Seismology: Depth to bedrock, soil stability, and compaction		3.00							
15c. Geology/Seismology: Surface faulting and deformations		5.00							
15d. Geology/Seismology: Other geological hazards		3.00							
16. Wetlands	8.33	3.67	29.33	4.33	34.67	5.00	40.00	5.00	40.00
16a. Total wetlands		5.00							
16b. Wetlands Component of Plot		1.00							
16c. High Quality Wetlands		5.00							
Total			370.4372		371.0372		357.9360		356.2
			3		.1		.1		

Table 7-1
Evaluation for "Environmentally Preferred"

Criteria ¹	Weight	BBNPP		Humboldt		Montour		Seedco	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
Is Alternative Site "Environmentally Preferred"? (Yes/No)				NO		NO		NO	

Notes:

¹Yellow highlighted row is from Ref NUREG-1555 Subject Areas for Candidate Site Selection and Screening. No fill is Functional Evaluation Elements [Ref EPRI Siting Study]

BBNPP ASER Appendix C will be revised, as follows, in a future revision of the ASER:

Humboldt Industrial Park		
Ranking Criteria ¹	Score	Justification
5e. Schools	<u>45</u>	There are <u>165869</u> public and private elementary, middle, and high schools located within a <u>2550</u> -mi (<u>4080</u> km) radius of the site.

Montour Site		
Ranking Criteria ¹	Score	Justification
5e. Schools	<u>24</u>	There are <u>143427</u> public and private elementary, middle, and high schools within a <u>2550</u> -mi (<u>4080</u> km) radius of the site.

Seedco Industrial Park		
Ranking Criteria ¹	Score	Justification
5e. Schools	<u>4</u>	There are <u>140869</u> public and private elementary, middle, and high schools located within a <u>2550</u> -mi (<u>4080</u> km) radius of the site.

BBNPP Site		
Ranking Criteria ¹	Score	Justification
5e. Schools	<u>35</u>	There are <u>164636</u> public and private elementary, middle, and high schools within a <u>2550</u> -mi (<u>4080</u> km) radius of the site.

RAI No. 5022 EIS 9.3-16

Summary: This RAI is related to the second alternative sites audit information need ALT-23.

Clarification is needed for ASER Appendix C, Page C-17, Criterion 1e. The conclusion: "There is approximately 130 feet of relief across the site. However, the plot plan can be accommodated with limited cut and fill activities...." appears to be inconsistent with the definition of the criterion's scoring basis (page A-1) that would score >100 ft of relief a score of 1. There is no provision in the definition of a score of 3 for "limited cut and fill".

Full Text (Supporting Information): None.

Response:

As noted by the NRC, "limited cut and fill" is not included in the scoring basis for Criterion 1e. As noted in Appendix A of the Bell Bend Nuclear Power Plant (BBNPP) Alternative Site Evaluation Report (ASER), Criterion 1e is a criterion that was subjectively scored by the Delphi panel. However, in response to the NRC's concerns regarding the scoring of Criterion 1e as provided in this and other RAIs, PPL's Delphi panel met to re-evaluate the scoring basis and resulting scores for Criterion 1e for the candidate sites.

As a result of the re-evaluation, the Delphi panel decided to revise the scoring basis for Criterion 1e and base the scoring of the criterion on the objective screening data. The scoring basis for Criterion 1e will be modified in a future revision of the ASER Appendix A and ER Table 9.3-8 as follows:

Ranking Criteria	Metric	Scoring Basis
1e. Topography SCORED BY EXPERT PANEL ⁴ USING SCREENING DATA	Site topography and resulting cut-and-fill requirements for construction	<p>5 = Site topography is flat or has less than or equal to 8050 feet (2445 meters [m]) of relief; no/limited cut-and-fill required.</p> <p>4 = Site topography has greater than 80 feet (24 m) but less than or equal to 160 feet (49 m) of relief.</p> <p>3 = Site topography has is hilly with greater than or equal to 16050 feet (4945 m) but less than or equal to 240400 feet (7330 m) of relief. in the area to be developed; significant amounts of cut-and-fill required</p> <p>2 = Site topography has greater than 240 feet (73 m) but less than or equal to 320 feet (98 m) of relief.</p> <p>1 = Site has steep topography has with greater than 320400 feet (9830 m) of relief. in the area of the site to be developed</p>

Based on reconnaissance-level United States Geological Survey topographic data for the sites, the revised scores for BBNPP and the alternative sites are provided below:

	Topographic Relief Across the Site (feet)	Revised Criterion 1e Score
BBNPP ¹	130	4
Humboldt	230	3
Montour	132	4
Seedco	300	2
¹ The power block for the BBNPP site was moved 900 feet between the original and revised scoring for Criterion 1e.		

The Criterion 1e scores for the sites will be revised as shown above in future revisions of the ASER Tables 6-1 and 7-1 and Appendix C and ER Table 9.3-10.

COLA Impact:

BBNPP COLA ER Section 9.3.2.1.1, third paragraph, will be revised, as follows, in a future revision of the COLA:

The topography of the BBNPP site is generally level with hills being present in the northern portions of the site. The site topography indicates a relief across the site of approximately 130 feet (ft) (39.6 meters [m]) (U.S. Geological Survey [USGS], 1989); therefore, the cut and fill requirements for construction would be minimal.

BBNPP COLA ER Table 9.3-8 will be revised, as follows, in a future revision of the COLA:

Ranking Criteria	Metric	Scoring Basis
1e. Topography SCORED BY EXPERT PANEL ⁴ USING SCREENING DATA	Site topography and resulting cut-and-fill requirements for construction	<p>5 = Site topography is flat or has less than or equal to 8050 feet (2445 meters [m]) of relief; no limited cut-and-fill required.</p> <p>4 = Site topography has greater than 80 feet (24 m) but less than or equal to 160 feet (49 m) of relief.</p> <p>3 = Site topography has is hilly with greater than or equal to 16050 feet (4945 m) but less than or equal to 240400 feet (7330 m) of relief. in the area to be developed; significant amounts of cut-and-fill required</p> <p>2 = Site topography has greater than 240 feet (73 m) but less than or equal to 320 feet (98 m) of relief.</p> <p>1 = Site has steep topography has with greater than 320400 feet (9830 m) of relief. in the area of the site to be developed</p>

BBNPP COLA ER Table 9.3-10 will be revised, as follows, in a future revision of the COLA:

Table 9.3-10 Weighted Scoring of Candidate Sites

	BBNPP	Bainbridge	Conowingo	Humboldt	Martins Creek	Montour	Peach Bottom	Seedco	Wallenpaupack	Indian River
17. Land Use	23.34 <u>24.54</u>	44.80 <u>15.48</u>	48.00 <u>20.40</u>	49.58 <u>21.48</u>	20.12 <u>22.14</u>	20.93 <u>22.92</u>	44.54 <u>15.72</u>	21.47 <u>22.68</u>	8.93	47.74 <u>19.32</u>
18. Hydrology	39.00	42.00	42.00	39.00	39.00	39.00	39.00	39.00	39.00	30.00
19. Terrestrial Resources	31.50	17.50	17.50	35.00	35.00	31.50	17.50	31.50	21.00	35.00
20. Aquatic Biological Resources	28.00	7.00	7.00	28.00	14.00	28.00	14.00	28.00	28.00	21.00
21. Socioeconomics	16.50	22.00	22.00	22.00	23.10	13.20	20.90	22.00	15.40	15.40
22. Environmental Justice	22.50	17.50	20.00	22.50	22.50	22.50	20.00	5.00	17.50	12.50
23. Historical and Cultural Resources	20.00	5.00	5.00	20.00	15.00	20.00	10.00	20.00	20.00	15.00
24. Air Quality	20.00	14.00	14.00	20.00	16.00	20.00	16.00	20.00	20.00	14.00
25. Human Health	18.00	8.00	16.00	16.00	6.00	18.00	14.00	14.00	14.00	18.00
26. Postulated Accidents	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
27. Transport of Radioactive Material	3.00	3.00	6.00	3.00	3.00	6.00	6.00	3.00	6.00	6.00
28. Transmission Corridors	38.24	32.00	32.00	24.00	24.00	16.00	32.00	24.00	16.00	16.00
29. Population	31.50	27.00	31.50	36.00	18.00	36.00	31.50	40.50	40.50	40.50
30. Facility costs	16.20	27.20	8.25	16.50	13.75	8.55	17.71	16.50	16.20	15.13
31. Geology	28.00	28.00	31.50	29.75	19.25	33.25	33.25	26.25	28.00	28.00
32. Wetlands	29.33	40.00	34.67	34.67	40.00	40.00	40.00	40.00	34.67	18.67
Total:	370.43 <u>371.3</u>	340.03 <u>10.7</u>	340.43 <u>12.8</u>	371.03 <u>72.9</u>	343.73 <u>15.7</u>	357.93 <u>59.9</u>	331.43 <u>32.6</u>	356.23 <u>57.4</u>	330.2	307.93 <u>09.5</u>

Notes:

The scoring for the *Proposed Site* (BBNPP) is not required when ranking the *Candidate Sites* to select the *Alternative Sites* but is included here for reference.

ASER Impact:

BBNPP ASER Appendix A will be revised, as follows, in a future revision of the ASER:

Ranking Criteria	Metric	Scoring Basis
1e. Topography SCORED BY EXPERT PANEL ⁴ USING SCREENING DATA	Site topography and resulting cut-and-fill requirements for construction	<p>5 = Site topography is flat or has less than or equal to 80 feet (24 m) of relief; no limited cut-and-fill required.</p> <p>4 = Site topography has greater than 80 feet (24 m) but less than or equal to 160 feet (49 m) of relief.</p> <p>3 = Site topography is hilly with greater than or equal to 160 feet (49 m) but less than or equal to 240 feet (73 m) of relief. in the area to be developed; significant amounts of cut-and-fill required</p> <p>2 = Site topography has greater than 240 feet (73 m) but less than or equal to 320 feet (98 m) of relief.</p> <p>1 = Site has steep topography has with greater than 320 feet (98 m) of relief. in the area of the site to be developed</p>

BBNPP ASER Table 6-1 will be revised, as follows, in a future revision of the ASER:

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Bainbridge		Conowingo		Humboldt		Martins Creek (NJ)		Montour	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
1. Land use, including availability, and areas requiring special consideration	6.33	2.47	15.48	3.00	18.00	3.26	19.58	3.35	20.12	3.49	20.93
1a. Land Area and Existing Facilities: Ability to support the combined EPR footprint including the protected area, cooling towers, ponds, switchyard, construction support areas		4.78		3.00		3.44		5.00		4.78	
1b. Special Areas: Hazardous waste or spoils areas		1.89		5.00		3.44		3.44		3.89	
1c. Zoning		1.22		5.00		5.00		5.00		1.44	
1d. Distance to dedicated land		3.00		1.00		3.00		1.00		5.00	
1e. Topography		1.44		3.00		1.44		2.33		2.33	
2. Hydrology, water quality, and water availability	9.0	4.67	42.00	4.67	42.00	4.33	39.00	4.33	39.00	4.33	39.00
2a. Water Quality (chemistry)		4.00		4.00		5.00		5.00		5.00	
2b. Receiving Body Water Quality		5.00		5.00		3.00		3.00		3.00	
2c. Volume		5.00		5.00		5.00		5.00		5.00	
3. Terrestrial resources (including endangered species)	7.28	2.50	17.50	2.50	17.50	5.00	35.00	5.00	35.00	4.50	31.50
3a. Endangered/threatened habitats		1.00		1.00		5.00		5.00		5.00	
3b. Floodplains		4.00		4.00		5.00		5.00		4.00	
4. Aquatic biological resources (including	7.28	1.00	7.00	1.00	7.00	4.00	28.00	2.00	14.00	4.00	28.00

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Bainbridge		Conowingo		Humboldt		Martins Creek (NJ)		Montour	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
endangered species)											
4a. Endangered/threatened habitats		1.00		1.00		5.00		1.00		5.00	
4b Thermal Discharge Sensitivity		1.00		1.00		3.00		3.00		3.00	
5. Socioeconomics (including aesthetics, demography, and infrastructure)	5.50	4.00	22.00	4.00	22.00	4.00	22.00	4.20	23.10	2.40	13.20
5a. Emergency services		5.00		5.00		5.00		5.00		3.00	
5b. Construction traffic		5.00		5.00		5.00		3.00		3.00	
5c. Construction workforce		5.00		5.00		5.00		5.00		3.00	
5d. Housing and necessities		1.00		1.00		1.00		3.00		1.00	
5e. Schools		4.00		4.00		4.00		5.00		2.00	
6. Environmental Justice	4.72	3.50	17.50	4.00	20.00	4.50	22.50	4.50	22.50	4.50	22.50
6a. Minority population		3.00		4.00		5.00		5.00		5.00	
6b. Low-income population		4.00		4.00		4.00		4.00		4.00	
7. Historic and Cultural Resources	4.94	1.00	5.00	1.00	5.00	4.00	20.00	3.00	15.00	4.00	20.00
7a. Historic properties		1.00		1.00		3.00		3.00		3.00	
7b. Historic districts		1.00		1.00		5.00		3.00		5.00	
8. Air Quality	4.00	3.50	14.00	3.50	14.00	5.00	20.00	4.00	16.00	5.00	20.00
8a. Climate and Meteorology: Weather risks/conditions		4.00		4.00		5.00		5.00		5.00	
8b. Class 1 Areas, Attainment / non-attainment Area		3.00		3.00		5.00		3.00		5.00	
9. Human Health	6.06	1.33	8.00	2.67	16.00	2.67	16.00	1.00	6.00	3.00	18.00

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Bainbridge		Conowingo		Humboldt		Martins Creek (NJ)		Montour	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
9a. Emergency preparedness program— proximity of residences/businesses for exclusion zone		1.00		3.00		1.00		1.00		3.00	
9b. Radiological pathways – water		2.00		4.00		4.00		1.00		5.00	
9c. Radiological pathways - food		1.00		1.00		3.00		1.00		1.00	
10. Postulated Accidents(a)	4.56	1.00	5.00	1.00	5.00	1.00	5.00	1.00	5.00	1.00	5.00
10a. Distance to Nearby Potential Hazards [per definition of Reg Guide 4.7]		1.00		1.00		1.00		1.00		1.00	
11. Transport of Radioactive Material (a)	3.00	1.00	3.00	2.00	6.00	1.00	3.00	1.00	3.00	2.00	6.00
11a. Operations/ Transportation: Support/challenges to transport of nuclear fuel and wastes		1.00		2.00		1.00		1.00		2.00	
12. Transmission corridors (land used, feasibility, and resources affected)	7.72	4.00	32.00	4.00	32.00	3.00	24.00	3.00	24.00	2.00	16.00
12a. Environmental impact of Proposed Transmission Interconnection		4.00		4.00		3.00		3.00		2.00	
13. Population distribution and density	8.67	3.00	27.00	3.50	31.50	4.00	36.00	2.00	18.00	4.00	36.00
13a. Distance to Population Centers		4.00		4.00		5.00		2.00		4.00	
13b. Population Density		2.00		3.00		3.00		2.00		4.00	
14. Facility costs	5.50	4.95	27.20	1.50	8.25	3.00	16.50	2.50	13.75	1.56	8.55

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Bainbridge		Conowingo		Humboldt		Martins Creek (NJ)		Montour	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
14a. Transportation: Barge access and capacity – distance, construction, or upgrade requirements		5.00		1.89		1.00		1.00		1.00	
14b. Transportation: Rail line access and capacity – distance, spur requirements, line capacity, or upgrade requirements		4.89		1.11		5.00		4.00		2.11	
15. Geology/Seismology	7.11	4.00	28.00	4.50	31.50	4.25	29.75	2.75	19.25	4.75	33.25
15a. Geology/ Seismology: Vibratory ground motion – seismic peak ground acceleration		5.00		5.00		5.00		4.00		5.00	
15b. Geology/Seismology: Depth to bedrock, soil stability, and compaction		3.00		5.00		5.00		1.00		5.00	
15c. Geology/Seismology: Surface faulting and deformations		5.00		5.00		5.00		5.00		5.00	
15d. Geology/Seismology: Other geological hazards		3.00		3.00		2.00		1.00		4.00	
16. Wetlands	8.33	5.00	40.00	4.33	34.67	4.33	34.67	5.00	40.00	5.00	40.00
16a. Total wetlands		5.00		5.00		5.00		5.00		5.00	
16b. Wetlands Component of Site		5.00		3.00		3.00		5.00		5.00	
16c. High Quality Wetlands		5.00		5.00		5.00		5.00		5.00	
Total			340.0310.7		340.4312.8		371.0372.9		343.7315.7		357.9359.9
Alternative Site? (Yes/No)²		NO		NO		YES		NO		YES	

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Peach Bottom		Seedco		Wallenpaupack		Indian River	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
1. Land use, including availability, and areas requiring special consideration	6.33	2.422.62	14.5415.72	3.583.78	21.4722.68	1.49	8.93	2.963.22	17.7419.32
1a. Land Area and Existing Facilities: Ability to support the combined EPR footprint including the protected area, cooling towers, ponds, switchyard, construction support areas		3.89		4.11		1.22		2.33	
1b. Special Areas: Hazardous waste or spoils areas		4.56		3.22		3.22		2.78	
1c. Zoning		1.67		5.00		1.00		5.00	
1d. Distance to dedicated land		1.00		4.56		1.00		1.00	
1e. Topography		<u>1.002.00</u>		<u>1.002.00</u>		1.00		<u>3.675.00</u>	
2. Hydrology, water quality, and water availability	9.0	4.33	39.00	4.33	39.00	4.33	39.00	3.33	30.00
2a. Water Quality (chemistry)		5.00		5.00		5.00		2.00	
2b. Receiving Body Water Quality		3.00		3.00		3.00		5.00	
2c. Volume		5.00		5.00		5.00		3.00	
3. Terrestrial resources (including endangered species)	7.28	2.50	17.50	4.50	31.50	3.00	21.00	5.00	35.00
3a. Endangered/threatened habitats		1.00		5.00		1.00		5.00	
3b. Floodplains		4.00		4.00		5.00		5.00	
4. Aquatic biological resources (including endangered species)	7.28	2.00	14.00	4.00	28.00	4.00	28.00	3.00	21.00
4a. Endangered/threatened habitats		1.00		5.00		5.00		5.00	
4b. Thermal Discharge Sensitivity		3.00		3.00		3.00		1.00	
5. Socioeconomics (including aesthetics, demography, and infrastructure)	5.50	3.80	20.90	4.00	22.00	2.80	15.40	2.80	15.40

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Peach Bottom		Seedco		Wallenpaupack		Indian River	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
5a. Emergency services		5.00		5.00		1.00		5.00	
5b. Construction traffic		3.00		5.00		5.00		3.00	
5c. Construction workforce		5.00		5.00		5.00		3.00	
5d. Housing and necessities		1.00		1.00		1.00		1.00	
5e. Schools		5.00		4.00		2.00		2.00	
6. Environmental Justice	4.72	4.00	20.00	1.00	5.00	3.50	17.50	2.50	12.50
6a. Minority population		5.00		1.00		4.00		1.00	
6b. Low-income population		3.00		1.00		3.00		4.00	
7. Historic and Cultural Resources	4.94	2.00	10.00	4.00	20.00	4.00	20.00	3.00	15.00
7a. Historic properties		3.00		3.00		3.00		1.00	
7b. Historic districts		1.00		5.00		5.00		5.00	
8. Air Quality	4.00	4.00	16.00	5.00	20.00	5.00	20.00	3.50	14.00
8a. Climate and Meteorology: Weather risks/conditions		5.00		5.00		5.00		4.00	
8b. Class 1 Areas, Attainment / non-attainment Area		3.00		5.00		5.00		3.00	
9. Human Health	6.06	2.33	14.00	2.33	14.00	2.33	14.00	3.00	18.00
9a. Emergency preparedness program—proximity of residences/businesses for exclusion zone		1.00		1.00		1.00		3.00	
9b. Radiological pathways – water		5.00		3.00		5.00		5.00	
9c. Radiological pathways – food		1.00		3.00		1.00		1.00	
10. Postulated Accidents(a)	4.56	1.00	5.00	1.00	5.00	1.00	5.00	1.00	5.00
10a. Distance to nearby potential hazards [per		1.00		1.00		1.00		1.00	

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Peach Bottom		Seedco		Wallenpaupack		Indian River	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
definition of Reg Guide 4.7]									
11. Transport of Radioactive Material (a)	3.00	2.00	6.00	1.00	3.00	2.00	6.00	2.00	6.00
11a. Operations/ Transportation: Support/challenges to transport of nuclear fuel and wastes		2.00		1.00		2.00		2.00	
12. Transmission corridors (land used, feasibility, and resources affected)	7.72	4.00	32.00	3.00	24.00	2.00	16.00	2.00	16.00
12a. Environmental impact of proposed transmission interconnection		4.00		3.00		2.00		2.00	
13. Population distribution and density	8.67	3.50	31.50	4.50	40.50	4.50	40.50	4.50	40.50
13a. Distance to population centers		4.00		5.00		5.00		5.00	
13b. Population density		3.00		4.00		4.00		4.00	
14. Facility costs	5.50	3.22	17.71	3.00	16.50	2.95	16.20	2.75	15.13
14a. Transportation: Barge access and capacity – distance, construction, or upgrade requirements		5.00		1.00		1.00		1.00	
14b. Transportation: Rail line access and capacity – distance, spur requirements, line capacity, or upgrade requirements		1.44		5.00		4.89		4.50	
15. Geology/Seismology	7.11	4.75	33.25	3.75	26.25	4.00	28.00	4.00	28.00
15a. Geology/ Seismology: Vibratory ground motion – seismic peak ground acceleration		5.00		5.00		5.00		5.00	
15b. Geology/Seismology: Depth to bedrock, soil stability, and compaction		5.00		3.00		3.00		1.00	
15c. Geology/Seismology: Surface faulting and deformations		5.00		5.00		5.00		5.00	
15d. Geology/Seismology: Other geological hazards		4.00		2.00		3.00		5.00	
16. Wetlands	8.33	5.00	40.00	5.00	40.00	4.33	34.67	2.33	18.67

Table 6-1
Weighted Scoring & Ranking to Determine Alternative Sites

Criteria ¹	Weight	Peach Bottom		Seedco		Wallenpaupack		Indian River	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
16a. Total wetlands		5.00		5.00		5.00		5.00	
16b. Wetlands Component of Site		5.00		5.00		3.00		1.00	
16c. High Quality Wetlands		5.00		5.00		5.00		1.00	
Total			<u>331.4332.6</u>		<u>356.2357.4</u>		330.2		<u>307.9309.5</u>
Alternative Site? (Yes/No)²		NO		YES		NO		NO	

BBNPP ASER Table 7-1 will be revised, as follows, in a future revision of the ASER:

Table 7-1
Evaluation for "Environmentally Preferred"

Criteria ¹	Weight	BBNPP		Humboldt		Montour		Seedco	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
1. Land use, including availability, and areas requiring special consideration	6.33	3.894.09	23.3424.54	3.263.58	19.5821.48	3.493.82	20.9322.92	3.583.78	21.4722.68
1a. Land Area and Existing Facilities: Ability to support the combined EPR footprint including the protected area, cooling towers, ponds, switchyard, construction support areas		5.00							
1b. Special Areas: Hazardous waste or spoils areas		4.78							
1c. Zoning		3.67							
1d. Distance to Dedicated Land		3.00							
1e. Topography		3.004.00							
2. Hydrology, water quality, and water availability	9.00	4.33	39.00	4.33	39.00	4.33	39.00	4.33	39.00
2a. Water Quality (chemistry)		5.00							
2b. Receiving Body Water Quality		3.00							
2c. Volume		5.00							
3. Terrestrial resources (including endangered species)	7.28	4.50	31.50	5.00	35.00	4.50	31.50	4.50	31.50
3a. Endangered/Threatened Habitats		5.00							
3b. Floodplains		4.00							
4. Aquatic biological resources (including endangered species)	7.28	4.00	28.00	4.00	28.00	4.00	28.00	4.00	28.00
4a. Endangered/Threatened Habitats		5.00							
4b Thermal Discharge Sensitivity		3.00							
5. Socioeconomics (including aesthetics, demography, and infrastructure)	5.50	3.00	16.50	4.00	22.00	2.40	13.20	4.00	22.00
5a. Emergency services		5.00							
5b. Construction Traffic		3.00							
5c. Construction Workforce		3.00							
5d. Housing and Necessities		1.00							
5e. Schools		3.00							
6. Environmental Justice	4.72	4.50	22.50	4.50	22.50	4.50	22.50	1.00	5.00
6a. Minority Population		5.00							
6b. Low-income Population		4.00							
7. Historic and Cultural Resources	4.94	4.00	20.00	4.00	20.00	4.00	20.00	4.00	20.00
7a. Historic Properties		3.00							
7b. Historic Districts		5.00							
8. Air Quality	4.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	20.00
8a. Climate and Meteorology: Weather risks/conditions		5.00							
8b. Class 1 Areas, Attainment / non-attainment Area		5.00							

Table 7-1
Evaluation for "Environmentally Preferred"

Criteria ¹	Weight	BBNPP		Humboldt		Montour		Seedco	
		Score	Wt. Score	Score	Wt. Score	Score	Wt. Score	Score	Wt. Score
9. Human Health	6.06	3.00	18.00	2.67	16.00	3.00	18.00	2.33	14.00
9a. Emergency preparedness program– proximity of residences/businesses for exclusion zone		3.00							
9b. Radiological pathways – water		5.00							
9c. Radiological pathways – food		1.00							
10. Postulated Accidents(a)	4.56	1.00	5.00	1.00	5.00	1.00	5.00	1.00	5.00
10a. Distance to Nearby Potential Hazards [per definition of Reg Guide 4.7]		1.00							
11. Fuel Cycle Impacts(a)	3.00	1.00	3.00	1.00	3.00	2.00	6.00	1.00	3.00
11a. Operations/ Transportation: Support/challenges to transport of nuclear fuel and wastes		1.00							
12. Transmission corridors (land used, feasibility, and resources affected)	7.72	4.78	38.24	3.00	24.00	2.00	16.00	3.00	24.00
12a. Environmental impact of proposed transmission interconnection		4.78							
13. Population distribution and density	8.67	3.50	31.50	4.00	36.00	4.00	36.00	4.50	40.50
13a. Distance to population centers		4.00							
13b. Population density		3.00							
14. Facility costs (environmental)	5.50	2.95	16.20	3.00	16.50	1.56	8.55	3.00	16.50
14a. Transportation: Barge access and capacity – distance, construction, or upgrade requirements		1.00							
14b. Transportation: Rail line access and capacity – distance, spur requirements, line capacity, or upgrade requirements		4.89							
15. Geology/Seismology	7.11	4.00	28.00	4.25	29.75	4.75	33.25	3.75	26.25
15a. Geology/ Seismology: Vibratory ground motion – seismic peak ground acceleration		5.00							
15b. Geology/Seismology: Depth to bedrock, soil stability, and compaction		3.00							
15c. Geology/Seismology: Surface faulting and deformations		5.00							
15d. Geology/Seismology: Other geological hazards		3.00							
16. Wetlands	8.33	3.67	29.33	4.33	34.67	5.00	40.00	5.00	40.00
16a. Total wetlands		5.00							
16b. Wetlands Component of Plot		1.00							
16c. High Quality Wetlands		5.00							
Total			370.4371		371.037		367.0359		366.235
			3		2.9		.9		7.4
Is Alternative Site "Environmentally Preferred"? (Yes/No)				NO		NO		NO	

Notes:

¹Yellow highlighted row is from Ref NUREG-1555 Subject Areas for Candidate Site Selection and Screening. No fill is Functional Evaluation Elements [Ref EPRI Siting Study]

Table 7-1
Evaluation for “Environmentally Preferred”

BBNPP ASER Appendix C will be revised, as follows, in a future revision of the ASER:

Humboldt Industrial Park		
Ranking Criteria¹	Score	Justification
1e. Topography	<u>4.443.00</u>	There is approximately 230 feet (70 meters [m]) of relief across the site. It has steep topography with greater than 100 feet (30 m) of relief in the area of the site to be developed.

Montour Site		
Ranking Criteria¹	Score	Justification
1e. Topography	<u>2.334.00</u>	This site has steep topography with approximately 132 feet (40 m) of relief across the site, although the steeper relief is concentrated on the southernmost and northernmost portions of the site.

Seedco Industrial Park		
Ranking Criteria¹	Score	Justification
1e. Topography	<u>4.002.00</u>	The site has steep topography with approximately 300 feet (91 m) of relief across the site.

BBNPP Site		
Ranking Criteria¹	Score	Justification
1e. Topography	<u>3.004.00</u>	There is approximately 130 feet (40 m) of relief across the site. However, the plot plan can be accommodated with limited cut and fill activities.

RAI No. 5024 EIS 4.4-15

Summary: *This RAI is related to the second alternative sites audit information need SE-2.*

Provide data necessary to ensure that sufficient capacity is available to meet the additional demands placed upon public services by the construction workforce, including comparisons of demands for public services generated by the construction work force against capacity and utilization rates for police and fire services, public water systems, wastewater/sewer treatment plants, and educational facilities.

Acceptance Criteria:

10 CFR 51.45

10 CFR 51.70

Full Text (Supporting Information): None.

Response:

At the reconnaissance level of the alternative site evaluation, as shown in ER Table 9.3-8, the metrics and scoring bases for ranking Criterion 5a, Emergency Services, and Criterion 5e, Schools, considered the total numbers and types of existing emergency services and total number of schools as an indication of the availability of these services to support the increased construction and operation workforce. Analyses for the alternative sites to ensure that the demands placed upon public services by the construction workforce, including comparisons of demands for public services generated by workers against capacity and utilization rates for police and fire services, public water systems, wastewater/sewer treatment plants, and educational facilities are considered beyond the reconnaissance level of this evaluation.

Reconnaissance-level information on capacity and utilization rates for police and fire services, public water systems, wastewater/sewer treatment plants, and educational facilities is not readily-available. This information is only available through contacts directly with individual hospitals, police stations, fire departments, wastewater treatment plants, school districts and school facilities. However, to address the NRC's concern, additional research was conducted including an analysis of schools within a 25 mile radius of each alternate site (see also response to RAI No. 5022 EIS 9.3-13) and communications with the local municipality for the host county and nearest adjacent county to obtain additional information regarding the capacity of schools, wastewater treatment and emergency services. The following provides a summary of the information gathered during this additional analysis.

Montour Site (Montour County, PA)

Schools

According to the Pennsylvania Department of Education (PDE), there are two school districts within the host county, which are also shared by two adjacent counties. The average enrollment during the 2009-2010 school year for both districts was approximately 2,537 students. (PDE, 2010b) The Danville School District contributed the most students, with 2,428 (PDE, 2010c). According to the Montour County Planning Commission (MCPC) Comprehensive Plan, recent trends show that enrollments in the school district have been steadily declining (MCPC, 2009).

Within the county, there also exists private, non-public learning institutions catering to students from pre-school to high school; these institutions number approximately 13 (PDE, 2010a).

According to the Columbia Montour Chamber of Commerce, current staffing is adequate at the schools located within the County for current enrollment levels (Gaffney, 2010a).

Columbia County, the nearest adjacent county, has six school districts (PDE, 2010b). The average enrollment during the 2009-2010 school year for all six school districts was approximately 10,315 students. The Berwick Area School District contributed the most students, with 3,084 (PDE, 2010b). According to the PDE, enrollment in school districts across the county is expected to drop over the next few years (PDE, 2010c). Within the county, there also exists private, non-public learning institutions catering to students from pre-school to high school; these institutions number approximately 8 (PDE, 2010a).

Please also refer to the response to RAI No. 5022 EIS 9.3-13 for information on the anticipated demand for schools within a 25-mile radius of the site.

Wastewater Treatment

According to the Montour County Comprehensive Plan, public sanitary sewer systems exist in four areas: the Danville/Mahoning Township area, the Valley Township system, Washingtonville system, and Liberty Township system. The Danville Treatment Plant recently increased capacity. Sewer planning has also been recently completed in Cooper Township. According to the comprehensive plan, Cooper and Valley Townships areas currently do not possess the required water/sewer infrastructure to sustain major development. No public sewer system exists in most of the County with only sections of Valley and Mahoning Townships being within present service areas. Valley Township area is also facing sewer capacity issues that affect development and planning in the immediate vicinity. (MCPC, 2009)

According to the Columbia Montour Chamber of Commerce, wastewater systems are controlled by individual townships and capacities can vary significantly. Danville Borough is currently using approximately half of the available design capacity for wastewater treatment (2.0 million gallons per day [MGD] of a 3.6 MGD capacity) (Gaffney, 2010a). However, a majority of the County does not have access to sewage, thus limiting the amount or density of new development in those locations (MCPC, 2009).

Columbia County, the nearest adjacent county, has 16 active wastewater treatment plants. Fourteen of these utilities are classified as minor facilities and two are considered a major wastewater utility. The total wastewater design capacity for the entire county is 9.1 MGD. Bloomsburg municipal authority wastewater treatment and Berwick area joint sewer authority are the two major plants with capacities of 4.3 MGD and 3.7 MGD, respectively. (PADEP, 2010)

Emergency Services

Police service exists for Mahoning Township and the City of Danville. Growth within the county may result in service gaps to other less populated areas of Montour County (MCPC, 2009). In addition to medical resources, a local American Red Cross branch is also situated in the city of Danville (DARC, 2010). Montour County has an Emergency Management Agency (EMA) that helps prepare for, manage, and recover from any type of natural disaster and emergency or threat to security that may occur within the county (Montour County EMA, 2010). Pennsylvania

also has an EMA with jurisdiction over Montour County (PEMA, 2010). In addition to local county resources, Montour County is a member of the East Central Pennsylvania Regional Task Force (ECPRTF). This task force of seven counties was formed to provide all-hazard planning, mitigation, response, and recovery services to the seven member counties (ECPRTF, 2010).

According to the Montour County EMA, emergency service providers are adequate for the current population. Montour County EMA has agreements with the surrounding counties including Columbia, Northumberland, and Union for fire, law enforcement and other emergency response services. (Gaffney, 2010a) According to the Columbia Montour Chamber of Commerce (Gaffney, 2010b), Montour County is the smallest county in the state of Pennsylvania and may not necessarily have the resources or infrastructure to support a large influx of population.

Columbia County, the nearest adjacent county, has a total of 2 hospitals (FindCounseling, 2010), 3 police stations (RadioReference, 2010) or sheriff departments, 26 fire stations or departments (including volunteer stations) (HOMEFACTS, 2010), and 17 emergency medical service organizations (RadioReference, 2010). Currently, police service exists for Berwick Township and the City of Bloomsburg. Pennsylvania also has an EMA with jurisdiction over Columbia County (PEMA, 2010). In addition to local county resources, Columbia County is a member of the ECPRTF, the seven-county task force formed to provide all-hazard planning, mitigation, response, and recovery services to the member counties (ECPRTF, 2010).

Humboldt Site (Luzerne County, PA)

Schools

There are twelve school districts contained within the boundaries of Luzerne County, PA. These school districts are also shared by multiple adjacent counties. (PDE, 2010b) The average enrollment during the 2009-2010 school year, for both school districts, was approximately 43,917 students. Enrollment is anticipated to remain steady until 2015. The Hazleton Area School District contributed the most students, with 13,062 (PDE, 2010c). Within the county, there also exists private, non-public learning institutions catering to students from pre-school to high school; these institutions number approximately 56 (PDE, 2010a).

According to Luzerne County, schools should have enough capacity to support in-migration of additional school aged children as the population has been declining over the past few years, and a significant portion of the population is elderly (Morelli, 2010).

According to the Greater Wilkes-Barre Chamber of Business and Industry, the region has good accessibility due to the interstates in the region and as a result, a new influx of population will be dispersed instead of being concentrated in one township. Between the different schools in the neighboring districts and townships, any additional population could be easily absorbed. (Williams, 2010)

Schuylkill County, the nearest adjacent county, has twelve school districts. The average enrollment during the 2009-2010 school year for all twelve school districts combined was approximately 19,291 students. The Pottsville Area School District contributed the most students, with 3,031 (PDE, 2010c). According to the Schuylkill County Comprehensive Plan, student enrollment is expected to decrease over the next few years (County of Schuylkill, 2006).

Within the county, there also exists private, non-public learning institutions catering to students from pre-school to high school; these institutions number approximately 16 (PDE, 2010a).

Also refer to the response to RAI No. 5022 EIS 9.3-13 for information on the anticipated demand for schools within a 25-mile radius of the site.

Wastewater Treatment

According to the Greater Wilkes-Barre Chamber of Business and Industry, adequate resources are available within the county to support a new project in the area. (Williams, 2010)

Schuylkill County, the nearest adjacent county, has 33 active wastewater treatment plants serving communities in the county. Twenty four of these utilities are classified as minor facilities and nine are considered major wastewater utilities. The total wastewater design capacity for the entire county is 31.4 MGD. According to the county comprehensive plan and City of Pottsville comprehensive plan, many of the municipal systems are at or nearing their capacity (City of Pottsville, 2001). There are also environmental issues with some systems with regard to treatment practices (PADEP, 2010).

Emergency Services

In addition to medical resources, a local American Red Cross branch is also situated in the city of Wilkes-Barre (Wyoming Valley Red Cross [WVRC], 2010). Luzerne County has an EMA that helps prepare for, manage, and recover from any type of natural disaster and emergency or threat to security that may occur within the county (Luzerne County Pennsylvania, 2010). Pennsylvania also has an EMA with jurisdiction over Luzerne County (PEMA, 2010). In addition to local county resources, Luzerne County is a member of the ECPRTF, the seven-county task force formed to provide all-hazard planning, mitigation, response, and recovery services to the member counties (ECPRTF, 2010).

According to the Columbia Montour Chamber of Commerce, the county is well equipped and has good emergency services; however, the level of emergency services will vary depending upon the municipality (Gaffney 2010a). According to Luzerne County, the county has experienced flooding emergencies over the last few years and is well equipped to respond to this type of emergency in the future due to the state and federal emergency aid received (Morelli, 2010).

Schuylkill County, the nearest adjacent county, has a total of 4 hospitals (Schuylkill Chamber of Commerce [SCC], 2010), 105 fire stations or departments (including volunteer stations) and 35 Emergency Management Service (EMS) providers (County of Schuylkill, 2006). Schuylkill County has an EMA that helps prepare for, manage, and recover from any type of natural disaster and emergency or threat to security that may occur within the county (SCEMA, 2010). Pennsylvania also has an EMA with jurisdiction over Schuylkill County (PEMA, 2010). In addition to local county resources, Schuylkill County is a member of the ECPRTF, the seven-county task force formed to provide all-hazard planning, mitigation, response, and recovery services to the member counties (ECPRTF, 2010).

According to the county comprehensive plan, boroughs and townships that expect to see growth during the planning period should consider either increasing the level of locally provided police services or establishing local police departments in order to accommodate the expected

increased demand for policing brought about by population growth. Fire protection services in existing communities such as the boroughs, the City of Pottsville, and more developed townships are generally adequate. (County of Schuylkill, 2006) Many existing communities contain multiple fire houses, which were originally established to serve larger populations. Currently, all of the fire companies and ambulance corps other than in Pottsville operate on a volunteer basis. This situation could begin to produce increased staffing problems in the future in areas of the county that expect to see growth during the planning period. (County of Schuylkill, 2006)

Seedco Site (Northumberland County, PA)

Schools

There are eight school districts contained within the boundaries of Northumberland County, PA. These school districts are also shared by two adjacent counties (PDE, 2010b). The average enrollment during the 2009-2010 school year was approximately 12,609 students. The Shamokin Area School District contributed the most students, with 2,445 (PDE, 2010c). According to information provided by the Northumberland County Industrial Development Authority, enrollment has been steadily declining in all school districts (King, 2010). Within the county, there also exists private, non-public learning institutions catering to students from pre-school to high school; these institutions number approximately 27 (PDE, 2010a).

Schuylkill County, the nearest adjacent county has twelve school districts. The average enrollment during the 2009-2010 school year for all twelve school districts combined was approximately 19,291 students. The Pottsville Area School District contributed the most students, with 3,031 (PDE, 2010c). According to the county comprehensive plan, student enrollment is expected to decrease over the next few years (County of Schuylkill, 2006). Within the county, there also exists private, non-public learning institutions catering to students from pre-school to high school; these institutions number approximately 16 (PDE, 2010a).

Also refer to the response to RAI No. 5022 EIS 9.3-13 for information on the anticipated demand for schools within a 25-mile radius of the site.

Wastewater Treatment

According to data provided by the Northumberland County Industrial Development Authority, there appears to be additional capacity available at all five major wastewater plants with the available capacity ranging between 42 and 65 percent. The following table summarizes the design capacity and peak average flow at these locations:

Location	Design capacity (MGD)	Peak average flow (MGD)
Milton Sewer Authority	3.42	2.00
Northumberland Sewer Authority	1.13	0.40
Mount Carmel	1.50	0.72
Sunbury	4.20	2.00
Shamokin-Coal Township	7.00	3.50

Wastewater is most often handled by municipal authorities, which usually support more than a single political jurisdiction. Capacities are currently sufficient, but increasingly more stringent treatment standards are requiring continual upgrades and improvements to the existing facilities. (King, 2010)

Schuylkill County, the nearest adjacent county, has 33 active wastewater treatment plants serving communities in Schuylkill County. Twenty four of these utilities are classified as minor facilities and nine are considered major wastewater utilities. The total wastewater design capacity for the entire county is 31.4 MGD. According to the county comprehensive plan and City of Pottsville comprehensive plan, many of the municipal systems are at or nearing their capacity (City of Pottsville, 2001). There are also environmental issues with some systems with regard to treatment practices (PADEP, 2010).

Emergency Services

In addition to medical resources, a local American Red Cross branch is also situated in the city of Sunbury (Sunbury Red Cross [SRC], 2010). Northumberland County has a department of public safety that maintains programs and procedures that protect lives and property within the county from the effects of natural or man-made disasters (Northumberland County Department of Public Safety, 2010). Pennsylvania also has an EMA with jurisdiction over Northumberland County (PEMA, 2010). In addition to local county resources, Northumberland County is a member of the ECPRTF, the seven-county task force formed to provide all-hazard planning, mitigation, response, and recovery services to the member counties (ECPRTF, 2010).

According to information provided by the Northumberland County Industrial Development Authority, the County provides a centralized emergency services control center which is staffed 24 hours a day, 7 days a week. The emergency services (police, fire, and ambulance) come from a variety of sources. Police are typically municipal employees, fire personnel are almost exclusively volunteers. Due to the extensive training and certification requirements for medical responders, these roles are becoming more privatized and/or hospital supported. (King, 2010)

Schuylkill County, the nearest adjacent county, has a total of 4 hospitals (SCC, 2010), 105 fire stations or departments (including volunteer stations) and 35 EMS providers (County of Schuylkill, 2006). Schuylkill County has an EMA that helps prepare for, manage, and recover from any type of natural disaster and emergency or threat to security that may occur within the county (SCEMA, 2010). Pennsylvania also has an EMA with jurisdiction over Schuylkill County (PEMA, 2010). In addition to local county resources, Schuylkill County is a member of the ECPRTF, the seven-county task force formed to provide all-hazard planning, mitigation, response, and recovery services to the member counties (ECPRTF, 2010).

According to the county comprehensive plan, boroughs and townships that expect to see growth during the planning period should consider either increasing the level of locally provided police services or establishing local police departments in order to accommodate the expected increased demand for policing brought about by population growth. Fire protection services in existing communities such as the boroughs, the City of Pottsville, and more developed townships are generally adequate. (County of Schuylkill, 2006) Many existing communities contain multiple fire houses, which were originally established to serve larger populations. Currently, all of the fire companies and ambulance corps other than in Pottsville operate on a volunteer basis. This situation could begin to produce increased staffing problems in the future

in areas of the county that expect to see growth during the planning period (County of Schuylkill, 2006).

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COLA Impact:

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

RAI No. 5033 EIS 9.3-37

Summary: This RAI is related to the second alternative sites audit information need AE-11.

Provide revision to Table 9.3-11 that includes only those ecologically important species that are directly relevant to each Alternative Site.

Full Text (Supporting Information): Table 9.3-11 is based on the entire State and many species on it are not relevant to the Alternative Sites. For example, the American brook lamprey is listed but only occurs in rivers in the northern or western part of the state, quite far from any of the Alternative Sites.

Response:

Environmental Report (ER) Table 9.3-11 has been revised to reflect only those ecologically important species that may occur at the alternative sites or along the conceptual transmission and water pipeline corridors. A new column has been added that specifies the site(s) at which the species may occur and the likelihood of suitable habitat for the species at those site(s). Species with no potential to occur at any site or along any corridor have been removed from the table. The following table identifies those species that have been removed from ER Table 9.3-11 and the reason for their removal.

Ecologically Important Species Removed from ER Table 9.3-11				
Common Name	Scientific Name	Habitat Type	Source	Reason for Removal
American Brook Lamprey	<i>Lampetra appendix</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Atlantic Sturgeon	<i>Acipenser oxyrinchus</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Banded Sunfish	<i>Enneacanthus obesus</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Bigmouth Buffalo	<i>Ictiobus cyprinellus</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Bigmouth Shiner	<i>Notropis dorsalis</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines

Ecologically Important Species Removed from ER Table 9.3-11				
Common Name	Scientific Name	Habitat Type	Source	Reason for Removal
Blackchin Shiner	<i>Notropis heterodon</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Blanding's Turtle	<i>Emys blandingii</i>	Emergent wetlands/marshes; lakes and ponds	Ohio DNR, 2009h	Species does not occur at or near any considered sites or along associated water and transmission lines
Bluebreast Darter	<i>Etheostoma camurum</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Bog Turtle	<i>Clemmys muhlenbergii</i>	Emergent wetlands/marshes	Virginia Department of Game and Inland Fisheries (VADGIF), 2009d	Species does not occur at or near any considered sites or along associated water and transmission lines
Brindled Madtom	<i>Noturus miurus</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Brook Silverside	<i>Labidesthes sicculus</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Burbot (Lake Erie population)	<i>Lota lota</i>	Lakes and ponds; Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Burbot (Allegheny River population)	<i>Lota lota</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Central Mudminnow	<i>Umbra limi</i>	Emergent wetlands/marshes; scrub-shrub swamps; forested wetlands and bogs; lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Channel Darter	<i>Percina copelandi</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines

Ecologically Important Species Removed from ER Table 9.3-11				
Common Name	Scientific Name	Habitat Type	Source	Reason for Removal
Checkered Sculpin	<i>Cottus sp. 7</i> – not described	Streams and rivers	PNHP, 2009m	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Cisco	<i>Coregonus artedii</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Coastal Plain Leopard Frog	<i>Rana sphenoccephala</i>	Emergent wetlands/marshes; lakes and ponds	TxPW, 2009	Species does not occur at or near any considered sites or along associated water and transmission lines
Eastern Massasauga	<i>Sistrurus catenatus catenatus</i>	Emergent wetlands/marshes	Ohio DNR, 2009i	Species does not occur at or near any considered sites or along associated water and transmission lines
Eastern Mudminnow	<i>Umbra pygmaea</i>	Emergent wetlands/marshes; scrub-shrub swamps; forested wetlands and bogs; lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Eastern Sand Darter	<i>Ammocrypta pellucida</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Ghost Shiner	<i>Notropis buchmanii</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Gilt Darter	<i>Percina evides</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Goldeye	<i>Hiodon alosoides</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Gravel Chub	<i>Erimystax x-punctatus</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines

Ecologically Important Species Removed from ER Table 9.3-11				
Common Name	Scientific Name	Habitat Type	Source	Reason for Removal
Hickory Shad	<i>Alosa mediocris</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Highfin carpsucker	<i>Carpionodes velifer</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Iowa Darter	<i>Etheostoma exile</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Ironcolor Shiner	<i>Notropis chalybaeus</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Kirtland's Snake	<i>Clonophis kirtlandii</i>	Riparian forests/thickets; human structures; emergent wetlands/marshes; forested wetlands and bogs	Ohio DNR, 2009e	Species does not occur at or near any considered sites or along associated water and transmission lines
Lake Sturgeon	<i>Acipenser fulvescens</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Longhead darter	<i>Percina macrocephala</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Longnose sucker	<i>Catostomus catostomus</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Mooneye	<i>Hiodon tergisus</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Mountain Brook Lamprey	<i>Ichthyomyzon greeleyi</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines

Ecologically Important Species Removed from ER Table 9.3-11				
Common Name	Scientific Name	Habitat Type	Source	Reason for Removal
Mountain Chorus Frog	<i>Pseudacris brachyphona</i>	Deciduous/mixed forests	Ohio DNR, 2009a	Species does not occur at or near any considered sites or along associated water and transmission lines
Mountain Earth Snake	<i>Virginia valeriae pulchra</i>	Deciduous/mixed forests; barren habitats	VADGIF, 2009a	Species does not occur at or near any considered sites or along associated water and transmission lines
Mountain Madtom	<i>Noturus eleutherus</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
New Jersey Chorus Frog	<i>Pseudacris triseriata kalmi</i>	Emergent wetlands/marshes; forested wetlands and bogs	VADGIF, 2009e	Species does not occur at or near any considered sites or along associated water and transmission lines
Northern Brook Lamprey	<i>Ichthyomyzon fossor</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Northern Madtom	<i>Noturus stigmosus</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Ohio Lamprey	<i>Ichthyomyzon bdellium</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Paddlefish	<i>Polyodon spathula</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Redbelly Turtle	<i>Pseudemys rubriventris</i>	Emergent wetlands/marshes; lakes and ponds	VADGIF, 2009f	Species does not occur at or near any considered sites or along associated water and transmission lines
Redfin Shiner	<i>Lythrurus umbratilis</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines

Ecologically Important Species Removed from ER Table 9.3-11				
Common Name	Scientific Name	Habitat Type	Source	Reason for Removal
River Carpsucker	<i>Carpionodes carpio</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
River Redhorse	<i>Moxostoma carinatum</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
River Shiner	<i>Notropis blennius</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Shorthead Garter Snake	<i>Thamnophis brachystoma</i>	Riparian forests/thickets, emergent wetlands/marshes	Medaille College, 2009	Species does not occur at or near any considered sites or along associated water and transmission lines
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Silver Chub	<i>Macrhybopsis storeriana</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Skipjack Herring	<i>Alosa chrysochloris</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Smallmouth Buffalo	<i>Ictiobus bubalus</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Southern Redbelly Dace	<i>Phoxinus erythrogaster</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Spotted Gar	<i>Lepisosteus oculatus</i>	Scrub-shrub swamps; lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines

Ecologically Important Species Removed from ER Table 9.3-11				
Common Name	Scientific Name	Habitat Type	Source	Reason for Removal
Spotted Sucker	<i>Minytrema melanops aculeatus</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Streamline Chub	<i>Erimystax dissimilis</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Threespine Stickleback	<i>Gasterosteus aculeatus</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Tippecanoe darter	<i>Etheostoma tippecanoe</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Touogue-tied Minnow	<i>Exoglossum laurae</i>	Streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
Warmouth	<i>Lepomis gulosus</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	Species does not occur within watersheds of any considered sites or associated water and transmission lines
West Virginia Water Shrew	<i>Sorex palustris punctulatus</i>	Riparian forests/thickets	Whitaker and Hamilton, 1998	Species does not occur at or near any considered sites or along associated water and transmission lines
Western Chorus Frog	<i>Pseudacris triseriata</i>	Emergent wetlands/marshes	Ohio DNR, 2009j	Species does not occur at or near any considered sites or along associated water and transmission lines

There are no commercial bait operations from the Susquehanna River and no commercial fisheries near any of the conceptual cooling water intake/discharge locations for any of the alternative sites. There are commercial fishing guides that operate along the river, including in the vicinity of the locations of the alternative sites' conceptual intake/discharge structures. The potential impact of construction and operation of the conceptual cooling water intake/discharge structures on commercial fishing in the vicinity would be small, if any.

COLA Impact:

BBNPP COLA ER Table 9.3-11 will be revised, as follows, in a future revision of the COLA:

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Acadian Flycatcher	<i>Empidonax virescens</i>	Riparian forests/thickets	Peterson, 2002	Potentially suitable habitat occurs in reasonable amounts at Seedco site and along Montour transmission line
Alder Flycatcher	<i>Empidonax alnorum</i>	Riparian forests/thickets, emergent wetlands/marshes; scrub-shrub swamps; forested wetlands and bogs	Peterson, 2002	Potentially suitable habitat occurs in reasonable amounts at Seedco site and along Montour transmission line
Alder Flycatcher	<i>Empidonax alnorum</i>	Emergent wetlands/marshes; scrub-shrub swamps; forested wetlands and bogs	Peterson, 2002	
Allegheny Woodrat	<i>Neotoma magister</i>	Deciduous/mixed forests; barren habitats; riparian forests/thickets	Whitaker and Hamilton, 1998	Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines
American Bittern	<i>Botaurus lentiginosus</i>	Emergent wetlands/marshes; Lakes and ponds	Peterson, 2002	Limited potentially suitable habitat occurs at Humboldt site and along Humboldt Transmission lines
American Black Duck	<i>Anas rubripes</i>	Emergent wetlands/marshes; Scrub-shrub swamps; forested wetlands and bogs; lakes and ponds	Peterson, 2002	Limited potentially suitable habitat occurs at Humboldt site and along Humboldt Transmission lines
American Brook Lamprey	<i>Lampetra appendix</i>	Streams and rivers	Page and Burr, 1991	

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
American Coot	<i>Fulica Americana</i>	Emergent wetlands/marshes	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission lines</u>
American Woodcock	<i>Scolopax minor</i>	Temporal shrublands/early successional forest; barren habitats; riparian forests/thickets; emergent wetlands/marshes; scrub-shrub swamps; forested wetlands and bogs	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines</u>
Appalachian Cottontail	<i>Sylvilagus obscurus</i>	Deciduous/Mixed Forests; temporal shrublands/early successional forest; barren habitats; scrub-shrub swamps	Whitaker and Hamilton, 1998	<u>Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines</u>
Atlantic Sturgeon	<i>Acipenser oxyrinchus</i>	Streams and rivers	Page and Burr, 1994	
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Riparian forests/thickets; emergent wetlands/marshes; lakes and ponds	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Seedco and Humboldt sites and along Humboldt transmission line</u>
Banded Sunfish	<i>Enneacanthus obesus</i>	Streams and rivers	Page and Burr, 1994	
Barn Owl	<i>Tyto alba</i>	Human structures	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Montour site and along Humboldt, Seedco, and Montour transmission lines</u>

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Bigmouth Buffalo	<i>Ictiobus cyprinellus</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	
Bigmouth Shiner	<i>Notropis dorsalis</i>	Streams and rivers	Page and Burr, 1991	
Black Buffalo	<i>Ictiobus niger</i>	Streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line</u>
Black Bullhead	<i>Ameiurus melas</i>	Streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line</u>
Black Tern	<i>Chlidonias niger</i>	Emergent wetlands/marshes	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along the Humboldt transmission line</u>
Blackchin Shiner	<i>Notropis heterodon</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Emergent wetlands/marshes; lakes and ponds, <u>Riparian forests/thickets</u>	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along the Humboldt transmission line. Potentially suitable habitat occurs in reasonable amounts at Seedco site and along Montour transmission line</u>
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	Riparian forests/thickets	Peterson, 2002	

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Blackpoll Warbler	<i>Dendroica striata</i>	Riparian forests/thickets, <u>forested wetlands and bogs</u>	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Seedco site and along Montour transmission line. Limited potentially suitable habitat occurs at Humboldt site and along the Humboldt transmission line</u>
Blackpoll Warbler	<i>Dendroica striata</i>	Forested wetlands and bogs	Peterson, 2002	
Blanding's Turtle	<i>Emys blandingii</i>	Emergent wetlands/marshes; lakes and ponds	Ohio DNR, 2009h	
Bluebreast Darter	<i>Etheostoma caeruleum</i>	Streams and rivers	Page and Burr, 1994	
Blue-headed Vireo	<i>Vireo solitarius</i>	Riparian forests/thickets	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Seedco site and along Montour transmission line</u>
Blue-winged Warbler	<i>Vermivora pinus</i>	Deciduous/Mixed Forests; temporal shrublands/early successional forest	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Humboldt, Seedco, and Montour sites and along Seedco and Humboldt transmission lines</u>
Bog Turtle	<i>Clemmys muhlenbergii</i>	Emergent wetlands/marshes	Virginia Department of Game and Inland Fisheries (VADGIF), 2009d	

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Bowfin	<i>Amia calva</i>	Emergent wetlands/marshes; Scrub-shrub swamps; lakes and ponds; streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable habitat occurs at Humboldt site and along the Humboldt and Montour transmission lines</u>
Bridle Shiner	<i>Notropis bifrenatus</i>	Streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line</u>
Brindled Madtom	<i>Noturus miurus</i>	Streams and rivers	Page and Burr, 1991	
Brook Silverside	<i>Labidesthes sicculus</i>	Streams and rivers	Page and Burr, 1991	
Brook Stickleback	<i>Culea inconstans</i>	Emergent wetlands/marshes; scrub-shrub swamps; forested wetlands and bogs; lakes and ponds; streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt and Montour transmission lines</u>
Brown Thrasher	<i>Toxostoma rufum</i>	Temporal shrublands/early successional forest; barren habitats	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Montour site and along Humboldt, Seedco, and Montour transmission lines</u>
Burbot (Lake Erie population)	<i>Lota lota</i>	Lakes and ponds; Streams and rivers	Page and Burr, 1991	
Burbot (Allegheny River population)	<i>Lota lota</i>	Streams and rivers	Page and Burr, 1991	

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Canada Warbler	<i>Wilsonia canadensis</i>	Riparian forests/thickets ; Scrub-shrub swamps; Forested wetlands and bogs	Peterson, 2002	Potentially suitable habitat occurs in reasonable amounts at Seedco and Humboldt sites and along Humboldt transmission line
Central Mudminnow	<i>Umbra limi</i>	Emergent wetlands/marshes; scrub-shrub swamps; forested wetlands and bogs; lakes and ponds; streams and rivers	Page and Burr, 1991	
Cerulean Warbler	<i>Dendroica cerulea</i>	Deciduous/mixed forests; riparian forests/thickets	Peterson, 2002	Potentially suitable habitat occurs in reasonable amounts at Seedco and Humboldt sites and along Seedco and Humboldt transmission lines
Channel Darter	<i>Percina copelandi</i>	Streams and rivers	Page and Burr, 1991	
Cheat Minnow	<i>Pararhinichthys bowersi</i>	Streams and rivers	Page and Burr, 1991	Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line
Checkered Sculpin	<i>Cottus</i> sp. 7 — not described	Streams and rivers	PNHP, 2009m	
Chesapeake Logperch	<i>Percina caprodes</i>	Streams and rivers	Page and Burr, 1991	Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Chimney Swift	<i>Chaetura pelagica</i>	Human structures	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Montour site and along Humboldt, Seedco, and Montour transmission lines</u>
Cisco	<i>Coregonus artedii</i>	Streams and rivers	Page and Burr, 1991	
Coastal Plain Leopard Frog	<i>Rana sphenoccephala</i>	Emergent wetlands/marshes; lakes and ponds	TxPW, 2009	
Common Moorhen	<i>Gallinula chloropus</i>	Emergent wetlands/marshes	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Common Nighthawk	<i>Chordeiles minor</i>	Human structures	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Montour site and along Humboldt, Seedco, and Montour transmission lines</u>
Eastern Box Turtle	<i>Terrapene carolina</i>	Emergent wetlands/marshes	<u>Virginia Department of Game and Inland Fisheries (VADGIF), 2009h</u>	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Eastern Brook Trout (native populations)	<i>Salvelinus fontinalis</i>	Streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line</u>

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Eastern Hellbender	<i>Cryptobranchus alleganiensis</i>	Streams and Rivers	VADGIF, 2009k	<u>Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line</u>
Eastern Massasauga	<i>Sistrurus catenatus catenatus</i>	Emergent wetlands/marshes	Ohio DNR, 2009i	
Eastern Mudminnow	<i>Umbra pygmaea</i>	Emergent wetlands/marshes; scrub-shrub swamps; forested wetlands and bogs; lakes and ponds; streams and rivers	Page and Burr, 1994	
Eastern Ribbon Snake	<i>Thamnophis sauritus sauritus</i>	Riparian forests/thickets; emergent wetlands/marshes; scrub-shrub swamps; forested wetlands and bogs; lakes and ponds	VADGIF, 2009c	<u>Potentially suitable habitat occurs in reasonable amounts at Seedco and Humboldt sites and along Humboldt and Montour transmission lines</u>
Eastern Sand Darter	<i>Ammocrypta pellucida</i>	Streams and rivers	Page and Burr, 1994	
Eastern Small-footed Bat	<i>Myotis leibii</i>	Deciduous/mixed forests	Whitaker and Hamilton, 1998	<u>Potentially suitable habitat occurs in reasonable amounts at the Seedco and Humboldt sites and along the Seedco and Humboldt transmission lines</u>
Eastern Spotted Skunk	<i>Spilogale putorius</i>	Barren habitats	Whitaker and Hamilton, 1998	<u>Limited potentially suitable habitat occurs at Montour site and along Montour transmission line</u>

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Four-toed Salamander	<i>Hemidactylum scutatum</i>	Forested wetlands and bogs	VADGIF, 2009j	<u>Limited potentially suitable habitat occurs along Humboldt transmission line</u>
Fowler's Toad	<i>Bufo fowleri</i>	Barren habitats, <u>emergent wetlands/marshes; lakes and ponds</u>	VADGIF, 2009b	<u>Limited potentially suitable habitat occurs at Montour and Humboldt sites and along Montour and Humboldt transmission lines</u>
Fowler's Toad	<i>Bufo fowleri</i>	<u>Emergent wetlands/marshes; lakes and ponds</u>	VADGIF, 2009b	
Ghost Shiner	<i>Notropis buchanani</i>	Streams and rivers	Page and Burr, 1991	
Gilt Darter	<i>Percina evides</i>	Streams and rivers	Page and Burr, 1991	
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	Deciduous/mixed forests; temporal shrublands/early successional forest; forested wetlands and bogs	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Seedco and Humboldt sites and along the Seedco and Humboldt transmission lines</u>
Goldeye	<i>Hiodon alosoides</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	
Gravel Chub	<i>Erimystax x-punctatus</i>	Streams and rivers	Page and Burr, 1991	
Great Blue Heron	<i>Ardea herodias</i>	Riparian forests/thickets; emergent wetlands/marshes; forested wetlands and bogs; lakes and ponds	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Seedco site. Limited potentially suitable habitat occurs at Humboldt site and along Humboldt and Montour transmission lines</u>

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Great Egret	<i>Ardea alba</i>	Emergent wetlands/marshes; riparian forests/thickets; lakes and ponds	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Seedco site. Limited potentially suitable habitat occurs at Humboldt site and along Humboldt and Montour transmission lines</u>
Green-winged Teal	<i>Anas discolor</i>	Emergent wetlands/marshes; lakes and ponds	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Hickory Shad	<i>Alosa mediocris</i>	Streams and rivers	Page and Burr, 1991	
Highfin carpsucker	<i>Carpionodes velifer</i>	Streams and rivers	Page and Burr, 1991	
Hoary Bat	<i>Lasiurus cinereus</i>	Riparian forests/thickets	Whitaker and Hamilton, 1998	<u>Potentially suitable habitat occurs in reasonable amounts at Seedco site and along Montour transmission line</u>
Horneyhead Chub	<i>Nocomis biguttatus</i>	Streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable roosting or foraging habitat occurs in the Susquehanna River along the Montour transmission line</u>

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Indiana Bat	<i>Myotis sodalis</i>	Riparian forests/thickets; human structures	Whitaker and Hamilton, 1998	<u>Potentially suitable habitat occurs in reasonable amounts at Humboldt, Seedco, and Montour sites and along Humboldt, Seedco, and Montour transmission lines</u>
Iowa Darter	<i>Etheostoma exile</i>	Lakes and ponds; streams and rivers	Page and Burr, 1994	
Ironcolor Shiner	<i>Notropis chalybaeus</i>	Streams and rivers	Page and Burr, 1994	
Jefferson Salamander	<i>Vermivora pinus</i>	Deciduous/mixed forests	Ohio, DNR, 2009c	<u>Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines</u>
Kentucky Warbler	<i>Oporornis formosus</i>	Riparian forests/thickets	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Seedco site and along Montour transmission line</u>
King Rail	<i>Rallus elegans</i>	Emergent wetlands/marshes	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Kirtland's Snake	<i>Clonophis kirtlandii</i>	Riparian forests/thickets; human structures; emergent wetlands/marshes; forested wetlands and bogs	Ohio DNR, 2009e	
Lake Sturgeon	<i>Acipenser fulvescens</i>	Lakes and ponds; streams and rivers	Page and Burr, 1994	

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Least Bittern	<i>Ixobrychus exilis</i>	Emergent wetlands/marshes	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Least brook lamprey	<i>Lampetra aepyptera</i>	Streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line</u>
Longear Sunfish	<i>Lepomis megalotis</i>	Streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line</u>
Long-Eared Owl	<i>Asio otus</i>	Barren habitats	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Montour site and along Montour transmission line</u>
Longhead darter	<i>Percina macrocephala</i>	Streams and rivers	Page and Burr, 1991	
Longnose Gar	<i>Lepisosteus osseus</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable habitat occurs along Montour and Humboldt transmission lines</u>
Longnose sucker	<i>Catostomus catostomus</i>	Streams and rivers	Page and Burr, 1991	

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Louisiana Waterthrush	<i>Seiurus motacilla</i>	Deciduous/mixed forests; riparian forests/thickets	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines</u>
Map Turtle	<i>Graptemys geographica</i>	Lakes and ponds	MDNR, 2009	<u>Limited potentially suitable habitat occurs along Humboldt transmission line</u>
Marsh Wren	<i>Cistothorus palustris</i>	Emergent wetlands/marshes	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Mooneye	<i>Hiodon tergisus</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	
Mountain Brook Lamprey	<i>Ichthyomyzon greeleyi</i>	Streams and rivers	Page and Burr, 1991	
Mountain Chorus Frog	<i>Pseudacris brachyphona</i>	Deciduous/mixed forests	Ohio DNR, 2009a	
Mountain Earth Snake	<i>Virginia valeriae pulchra</i>	Deciduous/mixed forests; barren habitats	VADGIF, 2009a	
Mountain Madtom	<i>Noturus eleutherus</i>	Streams and rivers	Page and Burr, 1991	
New Jersey Chorus Frog	<i>Pseudacris triseriata kalmi</i>	Emergent wetlands/marshes; forested wetlands and bogs	VADGIF, 2009e	
Northern Bobwhite Quail	<i>Colinus virginianus</i>	Temporal shrublands/early successional forest; barren habitats	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Montour site and along Montour transmission line</u>
Northern Brook Lamprey	<i>Ichthyomyzon fossor</i>	Streams and rivers	Page and Burr, 1991	

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Northern Coal Skink	<i>Eumeces anthracinus anthracinus</i>	Deciduous/mixed forests; barren habitats	PFBC, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines</u>
Northern Cricket Frog	<i>Acris crepitans</i>	Emergent wetlands/marshes; forested wetlands and bogs; lakes and ponds	NYDEC, 2009	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line.</u>
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	Riparian forests/thickets	Whitaker and Hamilton, 1998	<u>Potentially suitable habitat occurs in reasonable amounts at Seedco site and along Montour transmission line</u>
Northern Harrier	<i>Circus cyaneus</i>	Emergent wetlands/marshes; scrub-shrub swamps; forested wetlands and bogs	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Northern Leopard Frog	<i>Rana pipiens</i>	Emergent wetlands/marshes; lakes and ponds	Ohio DNR, 2009k	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Northern Madtom	<i>Noturus stigmosus</i>	Streams and rivers	Page and Burr, 1991	

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Northern Myotis	<i>Myotis septentrionalis</i>	Deciduous/mixed forests	Whitaker and Hamilton, 1998	Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines
Ohio Lamprey	<i>Ichthyomyzon bdellium</i>	Streams and rivers	Page and Burr, 1991	
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Barren habitats; scrub-shrub swamps; forested wetlands and bogs	Peterson, 2002	Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line
Osprey	<i>Pandion haliaetus</i>	Riparian forests/thickets Emergent wetlands/marshes; Lakes and ponds	Peterson, 2002	Potentially suitable habitat occurs in reasonable amounts at Seedco site and along Montour transmission line. Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line
Paddlefish	<i>Polyodon spathula</i>	Streams and rivers	Page and Burr, 1991	
Peregrine Falcon	<i>Falco peregrinus</i>	Human structures	Peterson, 2002	Potentially suitable habitat occurs in reasonable amounts at Montour site and along Humboldt, Seedco, and Montour transmission lines

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Emergent wetlands/marshes; lakes and ponds	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Prairie Warbler	<i>Dendroica discolor</i>	Barren habitats	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Montour site and along Montour transmission line</u>
Prothonotary Warbler	<i>Protonaria citrea</i>	Forested wetlands and bogs	Peterson, 2002	<u>Limited potentially suitable habitat occurs along Humboldt transmission line</u>
Queen Snake	<i>Regina septemvittata</i>	Riparian forests/thickets; emergent wetlands/marshes; lakes and ponds	Ohio DNR, 2009f	<u>Limited potentially suitable habitat occurs at Seedco and Humboldt sites and along Montour and Humboldt transmission lines</u>
Rainbow Smelt	<i>Osmerus mordax</i>	Streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line</u>
Red Crossbill	<i>Loxia curvirostra</i>	Barren habitats	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Redbelly Turtle	<i>Pseudemys rubriventris</i>	Emergent wetlands/marshes; lakes and ponds	VADGIF, 2009f	

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Redfin Shiner	<i>Lythrurus umbratilis</i>	Streams and rivers	Page and Burr, 1991	
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Forested wetlands and bogs	Peterson, 2002	<u>Limited potentially suitable habitat occurs along Humboldt transmission line</u>
Red-shouldered Hawk	<i>Buteo lineatus</i>	Emergent wetlands/marshes; forested wetlands and bogs	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
River Carpsucker	<i>Carpododes carpio</i>	Streams and rivers	Page and Burr, 1991	
River Redhorse	<i>Moxostoma carinatum</i>	Streams and rivers	Page and Burr, 1991	
River Shiner	<i>Notropis blennioides</i>	Streams and rivers	Page and Burr, 1991	
Rock Vole	<i>Microtus chrotorrhinus</i>	Riparian forests/thickets	Whitaker and Hamilton, 1998	<u>Potentially suitable habitat occurs in reasonable amounts at Seedco site and along Montour transmission line</u>
Rough Green Snake	<i>Opheodrys aestivus</i>	Riparian forests/thickets	Ohio DNR, 2009g	<u>Potentially suitable habitat occurs in reasonable amounts at Seedco site and along Montour transmission line</u>
Ruddy Duck	<i>Oxyura jamaicensis</i>	Emergent wetlands/marshes; lakes and ponds	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Scarlet Tanager	<i>Piranga olivacea</i>	Deciduous/mixed forests	Peterson, 2002	Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines
Sedge Wren	<i>Cistothorus platensis</i>	Emergent wetlands/marshes	Peterson, 2002	Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line
Short-eared Owl	<i>Asio flammeus</i>	Emergent wetlands/marshes	Peterson, 2002	Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line
Shorthead Garter Snake	<i>Thamnophis brachystoma</i>	Riparian forests/thickets	Medaille College, 2009	
Shorthead Garter Snake	<i>Thamnophis brachystoma</i>	Emergent wetlands/marshes	Medaille College, 2009	
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	Streams and rivers	Page and Burr, 1991	
Silver Chub	<i>Macrhybopsis storeriana</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	
Silver-haired Bat (migrant)	<i>Lasionycteris noctivagans</i>	Riparian forests/thickets	Whitaker and Hamilton, 1998	Potentially suitable habitat occurs in reasonable amounts at Seedco site and along Montour transmission line
Skipjack Herring	<i>Alosa chrysochloris</i>	Streams and rivers	Page and Burr, 1991	
Smallmouth Buffalo	<i>Ictiobus bubalus</i>	Streams and rivers	Page and Burr, 1991	

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Snowshoe Hare	<i>Lepus americanus</i>	Temporal shrublands/early successional forest; barren habitats; scrub-shrub swamps	Whitaker and Hamilton, 1998	<u>Limited potentially suitable habitat occurs at Montour site and along Humboldt, Seedco, and Montour transmission lines</u>
Solitary Sandpiper	<i>Tringa solitarius</i>	Emergent wetlands/marshes; lakes and ponds	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Sora	<i>Porzana carolina</i>	Emergent wetlands/marshes; lakes and ponds	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Southern Redbelly Dace	<i>Phoxinus erythrogaster</i>	Streams and rivers	Page and Burr, 1991	
Spotted Darter	<i>Etheostoma maculatum</i>	Streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line</u>
Spotted Gar	<i>Lepisosteus oculatus</i>	Scrub-shrub swamps; lakes and ponds; streams and rivers	Page and Burr, 1991	
Spotted Sucker	<i>Minytrema melanops aculeatus</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	
Spotted Turtle	<i>Clemmys guttata</i>	Temporal shrublands/early successional forest; barren habitats; emergent wetlands/marshes; scrub-shrub swamps; forested wetlands and bogs	Ohio DNR, 2009d	<u>Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line</u>
Streamline Chub	<i>Erimystax dissimilis</i>	Streams and rivers	Page and Burr, 1991	

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Tadpole Madtom	<i>Noturus gyrinus</i>	Streams and rivers	Page and Burr, 1991	Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line
Threespine Stickleback	<i>Gasterosteus aculeatus</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	
Timber Rattlesnake	<i>Crotalus horridus</i>	Deciduous/mixed forests; barren habitats; riparian forests/thickets	PFBC, 2004	Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines
Tippecanoe darter	<i>Etheostoma tippecanoe</i>	Streams and rivers	Page and Burr, 1991	
Touogue-tied Minnow	<i>Exoglossum laurae</i>	Streams and rivers	Page and Burr, 1991	
Tundra Swan (migr. Popn)	<i>Cygnus columbianus columbianus</i>	Lakes and ponds	Peterson, 2002	Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line
Upland Chorus Frog	<i>Pseudacris feriarum</i>	Emergent wetlands/marshes	VADGIF, 2009g	Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line
Virginia Rail	<i>Rallus limicola</i>	Emergent wetlands/marshes	Peterson, 2002	Limited potentially suitable habitat occurs at Humboldt site and along Humboldt transmission line
Warmouth	<i>Lepomis gulosus</i>	Lakes and ponds; streams and rivers	Page and Burr, 1991	

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
West Virginia Water Shrew	<i>Sorex palustris punctulatus</i>	Riparian forests/thickets	Whitaker and Hamilton, 1998	
Western Chorus Frog	<i>Pseudacris triseriata</i>	Emergent wetlands/marshes	Ohio DNR, 2009j	
Whip-poor-will	<i>Caprimulgus vociferus</i>	Temporal shrublands/early successional forest; barren habitats	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Montour site and along Humboldt, Seedco, and Montour transmission lines</u>
White Catfish	<i>Ameiurus catus</i>	Streams and rivers	Page and Burr, 1991	<u>Limited potentially suitable habitat occurs in the Susquehanna River along the Montour transmission line</u>
Willow Flycatcher	<i>Empidonax traillii</i>	Temporal shrublands/early successional forest; barren habitats; riparian forests/thickets emergent wetlands/marshes; scrub-shrub swamps; lakes and ponds	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines</u>
Wilson's Snipe	<i>Gallinago delicata</i>	Temporal shrublands/early successional forest, <u>emergent wetlands/marshes</u>	Peterson, 2002; <u>Cornell Laboratory of Ornithology, 2009</u>	<u>Limited potentially suitable habitat occurs at Montour and Humboldt sites and along Humboldt, Seedco, and Montour transmission lines</u>
Wilson's Snipe	<i>Gallinago delicata</i>	Emergent wetlands/marshes	Cornell Laboratory of Ornithology, 2009	
Winter Wren	<i>Troglodytes troglodytes</i>	Forested wetlands and bogs	Peterson, 2002	<u>Limited potentially suitable habitat occurs along Humboldt transmission line</u>

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Wood Thrush	<i>Hylocichla mustelina</i>	Deciduous/mixed forests	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines</u>
Wood Turtle	<i>Glyptemys insculpta</i>	Deciduous/mixed forests; riparian forests/thickets; emergent wetlands/marshes; scrub-shrub swamps; forested wetlands and bogs	Ohio DNR, 2009b	<u>Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines</u>
Worm-eating Warbler	<i>Limnothlypis swainsonii</i>	Deciduous/mixed forests	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt and Seedco transmission lines</u>
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	Temporal shrublands/early successional forest; riparian forests/thickets forested wetlands and bogs	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt and Seedco sites and along Humboldt, Seedco, and Montour transmission lines</u>

Table 9.3-11 Ecologically Important Species in Pennsylvania

Common Name	Scientific Name	Habitat Type	Source	Habitat Assessment
Yellow-Breasted Chat	<i>Icteria virens</i>	Temporal shrublands/early successional forest; barren habitats; riparian forests/thickets scrub-shrub swamps	Peterson, 2002	<u>Limited potentially suitable habitat occurs at Humboldt and Seedco sites and along Humboldt, Seedco, and Montour transmission lines</u>
Yellow-crowned Night Heron	<i>Nyctanassa violacea</i>	Riparian forests/thickets; emergent wetlands/marshes; forested wetlands and bogs; lakes and ponds	Peterson, 2002	<u>Potentially suitable habitat occurs in reasonable amounts at Humboldt and Seedco sites and along Humboldt, Seedco, and Montour transmission lines</u>
Yellow-throated Vireo	<i>Vireo flavifrons</i>	Forested wetlands and bogs	Peterson, 2002	<u>Limited potentially suitable habitat occurs along Humboldt transmission line</u>

Additionally, BBNPP ER Section 9.3.4 will be revised to remove 12 references (added in the November 25, 2009, revision of ER Section 9.3), as follows, in a future revision of the COLA:

Medaille College, 2009. Shorthead Gartersnake. Website:

http://www.medaille.edu/vmacor/herps_snakes_shortheadgarter.htm, Date accessed: October 9, 2009.

Ohio DNR, 2009a. A to Z Species Guide: Blanding's Turtle. Website:

http://www.dnr.state.oh.us/Home/species_a_to_z/SpeciesGuideIndex/blandingsturtle/tabid/6560/Default.aspx, Date accessed: October 9, 2009.

Ohio DNR, 2009e. A to Z Species Guide: Northern Leopard Frog. Website:

http://www.dnr.state.oh.us/Home/species_a_to_z/SpeciesGuideIndex/northernleopardfrog/tabid/6702/Default.aspx, Date accessed: October 12, 2009.

Ohio DNR, 2009h. A to Z Species Guide: Spotted Turtle. Website:

http://www.dnr.state.oh.us/Home/species_a_to_z/AZReptilesandAmphibians/tabid/17914/Default.aspx, Date accessed: October 9, 2009.

Ohio DNR, 2009i. A to Z Species Guide: Western Chorus Frog. Website:

http://www.dnr.state.oh.us/Home/species_a_to_z/SpeciesGuideIndex/westernchorusfrog/tabid/6785/Default.aspx, Date accessed: October 12, 2009.

Ohio DNR, 2009j. A to Z Species Guide: Wood Turtle. Website:

http://www.dnr.state.oh.us/Home/species_a_to_z/SpeciesGuideIndex/woodturtle/tabid/6796/Default.aspx, Date accessed: October 9, 2009.

PNHP, 2009m. Species of Concern - Checkered Sculpin (*Cottus sp.n.*). Website:

http://mddnr.chesapeakebay.net/mbss/SA_spec6.cfm?species=Checkered%20sculpin, Date accessed: October 19, 2009.

TxPW, 2009. Texas Parks and Wildlife Department. Southern Leopard Frog (*Rana sphenoccephala*). Website:

<http://www.tpwd.state.tx.us/huntwild/wild/species/southernleopardfrog/>, Date accessed: October 12, 2009.

VADGIF, 2009a. Bog turtle species description. Website:

<http://www.dgif.virginia.gov/wildlife/information/?s=030061>, Date accessed: October 9, 2009.

VADGIF, 2009d. Eastern ribbon snake species description. Website:

<http://www.dgif.virginia.gov/wildlife/information/?s=030045>, Date accessed: October 9, 2009.

VADGIF, 2009e. Four-toed salamander species description. Website:

<http://www.dgif.virginia.gov/wildlife/information/?s=020029>, Date accessed: October 12, 2009.

~~VADGIF, 2009f. Fowler's Toad species description, Website:
http://www.dgif.virginia.gov/wildlife/information/?s=020062, Date accessed:
October 9, 2009.~~

RAI No. 5033 EIS 9.3-40

Summary: Humboldt Alternative Site. Clarify whether or not there are naturally reproducing trout in Stony Creek.

Full Text: The revised ER alternatives text (ER Section 9.3 submitted 11-25-09) does not provide information about trout in Stony Creek. During the site visit in June 2010, the possibility of naturally reproducing trout occurring in the creek was mentioned but no other documentation was provided.

Response:

Stony Creek in Luzerne County, from its headwaters to its mouth at Cranberry Creek, is identified as a naturally reproducing trout stream by the Pennsylvania Fish and Boat Commission (PFBC) (PFBC, 2010a; 2010b). However, PFBC does not designate this stream as open for trout fishing as a special regulated stream, Class A stream, approved trout stream, or approved trout year-round stream (PFBC, 2010c). Observations during the June 15, 2010 site walkover indicated that the upper reach of Stony Creek, which originates within and runs west to east through the middle of the Humboldt site, is discontinuous with downstream reaches, with the stream going below ground for certain stretches. Because of this, it is unlikely that the portion of Stony Creek on the Humboldt site would support trout reproduction as trout would not be able to migrate to the Humboldt site. Additionally, mining activities that occurred previously at and near the site and the acidic nature of the sandstone bedrock in the area of the Humboldt site would tend to make the water in Stony Creek too acidic for trout reproduction. Should the Humboldt site be developed, loss of the portion of Stony Creek within the Humboldt site would have minimal, if any, impact on natural trout reproduction in Pennsylvania.

Data Sources:

PFBC, 2010a. Naturally Reproducing Trout Stream Limits - May 5 2010, available from PFBC website: <http://fishandboat.com/waters/trout.htm>, Date accessed: September 8, 2010.

PFBC, 2010b. Preview Stream Sections that Support Wild Trout Production (Beta), Website: <http://146.186.163.133/preview/map.ashx?layer=980>, Date accessed: September 15, 2010.

PFBC, 2010c. County Guide: Luzerne (zoomed to Stony Creek area), Website: <http://www.fish.state.pa.us/county.htm>, Date accessed: September 8, 2010.

COLA Impact:

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

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 rainbow and brown trout, could occur in the streams within the Humboldt site or along the ~~potential~~conceptual 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.

In addition, in a future revision of the COLA, the following new paragraph will be inserted in BBNPP ER Section 9.3.2.3.5 following the ninth paragraph:

Stony Creek, which originates on the Humboldt site in Luzerne County, is considered a naturally reproducing stream for brook trout by the Pennsylvania Fish and Boat Commission (PFBC) (PFBC, 2010a; 2010b). However, PFBC does not designate this stream as open for trout fishing as a special regulated stream, Class A stream, approved trout stream, or approved trout year-round stream (PFBC, 2010c). Observations during the June 15, 2010 site walkover indicated that the upper reach of Stony Creek, which runs west to east through the middle of the Humboldt site, is discontinuous with downstream reaches, with the stream going below ground for certain stretches. Because of this, it is unlikely that the portion of Stony Creek on the Humboldt site would support trout reproduction as trout would not be able to migrate to the Humboldt site. Additionally, mining activities that occurred previously at and near the site and the acidic nature of the sandstone bedrock in the area of the Humboldt site would tend to make the water in Stony Creek too acidic for brook trout reproduction. Should the Humboldt site be developed, loss of the portion of Stony Creek within the Humboldt site would have minimal, if any, impact on natural brook trout reproduction in Pennsylvania.

Additionally, the following references will be added to BBNPP ER Section 9.3.4 in a future revision of the COLA:

PFBC, 2010a. Naturally Reproducing Trout Stream Limits - May 5 2010, Available from PFBC website: http://fishandboat.com/waters_trout.htm, Date accessed: September 8, 2010.

PFBC, 2010b. Preview Stream Sections that Support Wild Trout Production (Beta), Website: <http://146.186.163.133/preview/map.ashx?layer=980>, Date accessed: September 15, 2010.

PFBC, 2010c. County Guide: Luzerne (zoomed to Stony Creek area), Website: <http://www.fish.state.pa.us/county.htm>, Date accessed: September 8, 2010.

RAI No. 5043 EIS 9.3-49

Summary: *This RAI is related to the second alternative sites audit information need TE-3.*

Humboldt Site: *Provide a brief discussion that expands upon the ecological description of the Humboldt site to reflect what was observed during the alternative site audit. Provide a description of the Pine Barrens ecosystem on a regional scale and its proximity and similarity to the ecological resources found on site. Address the ecological impacts, on a regional scale, should these local resources be lost.*

Full Text (Supporting Information): None.

Response:

Areas of sphagnum were observed along Stony Creek within the Humboldt site during the site walkover on June 15, 2010. However, these areas contained typical riparian vegetation and soils were not deep muck. Therefore, while sphagnum was present, the characteristics of sphagnum-rich areas, as defined by the Pennsylvania Natural Heritage Program (PNHP), were not present (PNHP, 2006; Fike, 1999). There was no accumulation of sphagnum into peat layers and none of the characteristic vascular plants associated with sphagnum-rich areas were present.

There were three seeps observed on the Humboldt site during the site walkover. All of these were within fill material or cut areas associated with the recent mine reclamation project at the site. There was no overt indication, as would be evidenced by plants typically restricted to acidic seeps or surficial ferric oxide deposition, that water in the seeps was acidic. Additionally, even if acidic, these seeps have not yet developed the characteristic flora associated with natural acidic seeps (Fike, 1999) and lack any current ecological value of natural acidic seeps. Given the proximity of the Humboldt site to known areas (e.g., the Valmont Industrial Park, Dreck Creek Watershed, and Black Creek Flats) that contain high quality sphagnum-rich and acidic seep communities (PNHP, 2006), the loss of small amounts of limited quality or developing habitat of these types from the Humboldt site would be expected to have only a very small, if any, regional impact on acidic seeps and sphagnum-rich areas or any state or federally protected plant species associated with these habitats.

Pine barrens do not occur on or adjacent to the Humboldt site. The Humboldt Barrens, which contain scrub oak and jack pine with an understory of grasses, forbs, and heath species, have been mapped to the east and northeast of the Humboldt site. This existing mapping does not show the defined Humboldt Barrens extending onto the Humboldt site. (PNHP, 2006) During the site walkover, the northern portion of the Humboldt site was observed to contain common woody vegetation (e.g., heath species and trees) that are typical of the nearby Humboldt Barrens (PNHP, 2006). However, the density of vegetation is greater at the Humboldt site (complete ground cover by heath species over much of the area) than on the Humboldt Barrens, likely due to greater plant-available moisture from deeper soils. In addition, barrens-associated grass and forb species are unlikely to co-locate with the woody plants on the Humboldt site due to the complete ground cover by heath species. The extreme northern portion of the Humboldt site, which occurs along a rocky ridge with thin soils, may contain barrens-associated grass and forb species and may represent the edge of the community extending from the Humboldt Barrens. Scrub oak and jack pine are present and the heath understory is sparse, leaving much of the ground exposed. Because the amount of potential barrens habitat within the Humboldt site is relatively small compared to that within the Humboldt Barrens, loss of this habitat from the

Humboldt site would be expected to have only a small regional impact on heath barrens habitat or any state or federally protected plant species associated with these habitats.

Data Sources:

Fike, J., 1999. Terrestrial and Palustrine Plant Communities of Pennsylvania, Pennsylvania Natural Diversity Inventory, June.

PNHP, 2006. A Natural Areas Inventory Luzerne County, Pennsylvania: Update – 2006. Prepared for Luzerne County Board of Commissioners.

COLA Impact:

BBNPP COLA ER Section 9.3.2.3.4, third paragraph, will be revised, as follows, in a future revision of the COLA:

There are 59 plant species whose current or proposed status in the state would provide protection under Pennsylvania Code Title 17 Chapter 45, Conservation of Pennsylvania Native Wild Plants (The Pennsylvania Code, 2009) that may occur in Luzerne County. For purposes of this analysis, only those species listed as Pennsylvania Threatened, Pennsylvania Endangered, or species proposed for these two classifications are considered. Other levels of protection for plant species in Pennsylvania apply to commercial exploitation, and there would be no commercial exploitation of species on the Humboldt site. Two of the 59 species are restricted to calcareous habitats that do not occur on the Humboldt site (Table 9.3-19; Rhoads and Block, 2007), but the other 57 species could occur on the Humboldt site. In spite of the past mining disturbance to much of the Humboldt site, it is adjacent to the Humboldt Barrens and the Valmont Industrial Park, two known natural communities with considerable botanical diversity. Because of the proximity to these two natural areas and the potential for similar habitats, particularly acidic habitats (acidic seeps, and Sphagnum-rich areas, and heath barrens) within the Humboldt site, there is a greater probability that state-protected plant species occur compared to the other considered *Alternative Sites*.

In addition, in a future revision of the COLA, the following two new paragraphs will be inserted in BBNPP ER Section 9.3.2.3.4 following the third paragraph:

Areas of sphagnum were observed along Stony Creek within the Humboldt site during the June 15, 2010, site walkover. However, these areas contained typical riparian vegetation and soils were not deep muck. Therefore, while sphagnum was present, the characteristics of sphagnum-rich areas, as defined by PNHP, were not present (PNHP, 2006; Fike, 1999). There was no accumulation of sphagnum into peat layers and none of the characteristic vascular plants associated with sphagnum-rich areas were present. There were three seeps observed on the Humboldt site during the site walkover. All of these were within fill material or cut areas associated with the recent mine reclamation project undertaken at the site. There was no overt indication, as would be evidenced by plants typically restricted to acidic seeps or surficial ferric oxide deposition, that water in the seeps was acidic. Additionally, even if acidic, these seeps have not yet developed the characteristic flora associated with natural acidic seeps (Fike, 1999) and lack any current ecological value of natural acidic seeps. Given the proximity of the Humboldt site to known areas (e.g., the Valmont Industrial Park, Dreck Creek Watershed, and Black

Creek Flats) that contain high quality communities of these habitat types (PNHP, 2006), the loss of small amounts of limited quality or developing habitat of these types from the Humboldt site would be expected to have only a very small, if any, regional impact on acidic seeps and sphagnum-rich areas or any state or federally protected plant species associated with these habitats.

Pine barrens do not occur on or adjacent to the Humboldt site. The Humboldt Barrens, which contain scrub oak and jack pine with an understory of grasses, forbs, and heath species, have been mapped to the east and northeast of the Humboldt site. This existing mapping does not show the defined Humboldt Barrens extending onto the Humboldt site. (PNHP, 2006) During the site walkover, the northern portion of the Humboldt site was observed to contain common woody vegetation (heath species and trees) that are typical of the nearby Humboldt Barrens (PNHP, 2006). However, the density of vegetation is greater at the Humboldt site (complete ground cover by heath species over much of the area) than on the Humboldt Barrens, likely due to greater plant-available moisture from deeper soils. In addition, barrens-associated grass and forb species are unlikely to co-locate with the woody plants on the Humboldt site due to the complete ground cover by heath species. The extreme northern portion of the Humboldt site, which occurs along a rocky ridge with thin soils, may contain barrens-associated grass and forb species and may represent the edge of the community extending from the Humboldt Barrens. Scrub oak and jack pine are present and the heath understory is sparse, leaving much of the ground exposed. Because the amount of potential barrens habitat within the Humboldt site is relatively small compared to that within the Humboldt Barrens, loss of this habitat from the Humboldt site would be expected to have only a small regional impact on heath barrens habitat or any state or federally protected plant species associated with this habitat.

Additionally, the following references will be added to BBNPP ER Section 9.3.4 in a future revision of the COLA:

Fike, J., 1999. Terrestrial and Palustrine Plant Communities of Pennsylvania. Pennsylvania Natural Diversity Inventory, June.

PNHP, 2006. A Natural Areas Inventory Luzerne County, Pennsylvania: Update – 2006. Prepared for Luzerne County Board of Commissioners.