

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

***Accidents***

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
ACC7.1-1  ESRP 7.1  10 CFR 52.79(a)	Provide updated Design Basis Accident (DBA) analyses and source terms for the Locked Rotor, Rod Ejection, and Steam System Piping Failure accidents that are consistent with the accidents reviewed in the EPR DCD and COLA FSAR.	<p>ESRP Section 7.1, directs the staff to review the applicant's calculated dose consequences presented in the environmental report (ER). The only difference between the DBA evaluation conducted for the safety review and the DBA evaluation conducted environmental review is in the choice of the X/Q used to incorporate site characteristics in the evaluation. The safety review uses a X/Q that is exceeded no more than 5 percent of the time, while the environmental review uses a median X/Q. Therefore, the accident progression and radiological release details for the environmental review should be the same as those described in the FSAR and the DCD. The Locked Rotor accident and the Rod Ejection accident conditions described in the ER are inconsistent with the corresponding accident conditions described in the USEPR FSAR (DCD) submitted to the NRC on Dec. 11, 2007.</p> <p>1) The Locked Rotor accident doses listed in Table 7.1-13 of the ER are for 8% clad failure. The DCD does not present dose estimates for 8% clad failure. It presents dose estimates for 9.5 percent clad failure. Provide the doses and source terms for 9.5 percent clad failure with median X/Q, or justify the difference.</p> <p>2) The Rod Ejection accident doses listed in Table 7.1-13 of the ER are for 26 percent clad failure. The DCD does not present dose estimates for a rod ejection accident with 26 percent clad failure. It presents dose estimates for 36.7 percent clad failure. Provide the doses and source terms for 36.7 percent clad failure with median X/Q, or justify the difference.</p> <p>3) Table 7.1-13 includes a dose for a Steam System Piping Failure (Main Steam Line Break) accident with a 1.24 percent clad failure.</p> <p>a) What is the basis for this accident? A Steam System Piping Failure accident with a 1.24 percent clad failure is not addressed in</p>

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
		the EPR DCD. b) Provide doses and source terms for the Steam System Piping Failure accidents with 3.3 percent clad failure and the accident with 0.58% full-rod fuel melt that are listed in the DCD.
ACC7.1-2 ESRP 7.1 10 CFR 52.79(a)	Provide a justification of notes a) and b) in Table 7.1-4 in ER.	Notes a) and b) in Table 7.1-4 in ER are identical. Are they intended to convey different concepts? If so, explain.
ACC7.2-1 ESRP 7.2 10 CFR 51.50(c)	Provide electronic copies of input and output files for the MACCS2 computer code.	The staff conducts calculations to confirm the severe accident and SAMA analyses presented in the ER and makes independent severe accident analysis calculations. Provide electronic copies of the MACCS2 input and output files for use in the staff's review.
ACC7.2-2 ESRP 7.2 10 CFR 51.50(c)	Provide the average early and latent cancer fatalities.	ESRP 7.2 directs the staff to evaluate the average individual risk of an early fatality for individuals within 1 mi of the reactor and the average individual risk of latent cancer fatalities for individuals within 10 mi of the reactor (See Commission's 1986 Policy Statement, 51 FR 28044) for inclusion in the EIS.
ACC7.2-3 ESRP 7.2 10 CFR 51.50(c)	Provide a qualitative discussion on the Bell Bend Nuclear Power Plant (BBNPP) un-interdicted aquatic food pathway and explain whether and how the Susquehanna Steam Electric Station (SSES) dose bounds the BBNPP dose for this pathway.	<p>The ER refers to NUREG 1437 for a qualitative analysis for the un-interdicted aquatic food pathway. No quantitative, site-specific study was performed for this pathway.</p> <p>The NUREG 1437 analyzes water pathways, including un-interdicted aquatic food pathway, for many nuclear power plants, including SSES, which is classified as a plant located on a small river. Please explain how this study is pertinent to an US EPR at the BBNPP site. Please provide a qualitative link between SSES, covered by NUREG</p>

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
		1437, and a US EPR at the BBNPP site.
ACC7.2-4 ESRP 7.2 10 CFR 51.50(c)	Provide a logical basis for concluding that the groundwater pathway dose risk is small.	With respect to the last paragraph of ER Section 7.2.2, (the next to last sentence), provide information sufficient to demonstrate that risks associated with groundwater releases from a US EPR severe accident would be lower than they are for SSES. The logic should address both release frequency and source term. If the air pathway dose risk is reduced, does it necessarily follow that the groundwater pathway risk is also reduced? If so why?
ACC7.2-5 ESRP 7.2 10 CFR 51.50(c)	Provide reference and justification for the 5.7 person-rem/yr value for normal operation used in ER.	The ER states that “as reported in ER Section 5.4, the total collective dose from normal operations is ... 5.7 person-rem per year.” Where in ER Section 5.4 is this information? Please justify this conclusion.
ACC7.2-6 ESRP 7.2 10 CFR 51.50(c)	Explain what is meant by “The time window for the analysis is 24 hours following core damage” in ER Section 7.2.1.3.	The first paragraph of ER Section 7.2.1.3 contains the sentence referenced. What is the meaning of the statement? The MACCS2 analysis should cover at least five years following the accident. Are there no severe accident releases that extend beyond 24 hours? The DBA Loss of Coolant Accident (LOCA) and fuel handling accidents have significant releases after 24 hours. Explain or justify the use of 24 hours following core damage for this analysis.
ACC7.3-1 ESRP 7.3 10 CFR 51.50(c)	Provide a justification for why only the top 50% contributing cutsets of CDF were evaluated in the ER.	The ER states that only the “top 100 cutsets that “represent the approximately 50 % of the total CDF ... were evaluated.” Justify how looking at cutsets that contribute only about 50% of the CDF establishes that all possible design alternatives for the US EPR were addressed. In addition, discuss why large release frequency (LRF) cutsets were not evaluated to establish alternatives.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
ACC7.3-2 ESRP 7.3 10 CFR 52.79(a)	Provide a qualitative discussion on why the fire risk bounds an earthquake risk.	There is no quantitative evaluation of seismic risk in the ER. However, the ER states that “the seismic risk contribution was ... equivalent to the internal fire risk.” Provide a qualitative discussion on why the fire risk bounds seismic risk for the US EPR reactor at the BBNPP site.
ACC7.3-3 10 CFR 51.50(c) 10 CFR 52.79(d)(3)	Provide a schedule for completion of the plant operation and training procedures and a brief description of items to be considered in developing the procedures including risk insights.	The staff is required to address both SAMDAs and operation and training procedural alternatives in its SAMA review in the EIS. Provide a schedule for development of operational and training procedures, and provide a brief discussion of factors, including risk insights, to be considered in developing non-hardware alternatives.
ACC7.3-4 10 CFR 51.30(d) 10 CFR 51.55(a) 10 CFR 51.75(c)(2)	Provide an evaluation of each of the 51 SAMDA candidates listed in Table 6.2 of the EPR design certification ER.	AREVA lists 51 SAMDA candidates that were deferred because they were not required for design certification. Most, but not all, of these candidates pertain to procedures and training. The ER implicitly assumes that all 51 of the deferred candidates are related to procedures and training by not addressing any of the candidates. However, there are at least six candidates in the design certification list of 51 that are site specific and do not refer to procedures and training. Because of the proposed facility's proximity to the SSES, some SAMA candidates that refer to multiunit sites may be feasible; therefore, please address all multiunit SAMAs from the design certification list as well. To be sure that no candidate is overlooked, the BBNPP ER should address each candidate in the list.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
ACC7.3-5 10 CFR 51.30(d) 10 CFR 51.55(a) 10 CFR 51.75(c)(2)	Provide a justification for using estimated retrofit costs to determine whether a SAMDA is cost beneficial.	Staff is required to assess whether potential SAMDAs are cost beneficial. Many of the implementation cost estimates in the ER submitted with the U.S. EPR design certification (DC) application are based on retrofitting the SAMDA in an existing plant. In response to Question 19-121(d) of RAI 6 on the DC application, the DC applicant indicates that changing the design would cost a minimum of \$100,000 at this stage, i.e., for a plant that has not yet been built. However, Section 7.3.2 of the BBNPP ER refers to a minimum implementation cost of \$150,000. Explain whether the cost-benefit analysis should be based on a cost of \$150,000 or \$100,000 for a plant that is still being designed.

***Air quality/meteorology***

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
MET2.7-1 ESRP 2.7 40 CFR 81.339 40 CFR 51 Appendix W	Provide detailed estimates of ozone precursor (NOx and VOC) emissions associated with construction and operation of the BBNPP for use in a general conformity determination.	40 CFR 81.339 lists Luzerne county as attaining the 8-hour ozone standard on December 19, 2007 and is therefore a maintenance area for ozone. 40 CFR Part 51 Subpart W requires a Federal agency to make a determination that a Federal action conforms to the applicable implementation plan in a nonattainment or maintenance area. Emission estimates are the basis for the general conformity determination. Provide a detailed estimate of ozone precursor (NOx and VOC) emissions associated with both construction and operation of the BBNPP site for the purpose of supporting the general conformity determination.
MET2.7-2	Provide the period of record for the data used to construct the windrose plots in the ER for Figures 2.7-89, 2.7-90, and Figures 2.7-91. Provide a	ESRP 2.7 directs staff to evaluate onsite meteorological data in context with other regional sites. In the ER, Figures 2.7-89 through 2.7 -91 are windrose plots from nearby National Weather Service (NWS) sites, but

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
<p>ESRP 2.7 10 CFR 100.20(c)</p>	<p>comparison for the 2001-2007 period at these three NWS stations with the SSES weather station. Provide a comparison of the NWS windrose plots to the annual 10- and 60-meter windrose plots for SSES in Figures 2.7-55 and 2.7-72, respectively. Provide an explanation for the increased frequency of winds from the NNE and NE at SSES when compared to the NWS stations.</p>	<p>the years plotted and data sources are not identified. In addition, there are obvious differences between the NWS windroses and the 10-m and 60-m windrose plots for SSES (Figures 2.7-55 and 2.7-72, respectively). Specifically, there is an increased frequency of winds from the NNE and NE at SSES when compared to the NWS sites. Describe and explain why these differences might exist.</p>
<p>MET2.7-3 ESRP 2.7 10 CFR 50 Appendix I 10 CFR 50.34 Regulatory Guide 1.111 Revision 1 Regulatory Guide 1.145 Revision 1</p>	<p>Provide model inputs used in the AEOLUS3 code for both normal releases and design basis accidents (DBAs).</p>	<p>In accordance with ESRP 2.7, the NRC staff has a confirmatory role in evaluating design basis accidents (DBAs) and relative concentration and deposition estimates for routine releases of radioactive effluent to the atmosphere. NRC staff intends to perform independent calculations for the BBNPP site and compare the results of its calculations to the applicant's results reported in the ER. Therefore, provide to the staff all model input used to calculate relative concentration and deposition values for both DBAs and normal releases so confirmatory calculations can be performed.</p>
<p>MET2.7-4 ESRP 2.7 10 CFR 50 Appendix I Regulatory Guide 1.111</p>	<p>Provide a description of how the recirculation correction factor (RCF) values listed in Table 2.7-128 were calculated and how the values are used in the AEOLUS3 model for calculating relative concentration and deposition from normal operations.</p>	<p>In accordance with ESRP 2.7, the NRC staff has a confirmatory role in evaluating relative concentration and deposition estimates for routine releases to the atmosphere. In Section 2.7.6.1.1 of the ER, site-specific recirculation correction factors (RCFs) were developed and used in calculating relative concentration and deposition estimates. NRC staff intends to verify the applicability and appropriateness of the RCFs used in this analysis. Therefore, provide documentation on how the RCFs were calculated for the BBNPP site and how the values are used within the</p>

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
Revision 1		AEOLUS3 model.
MET5.3-1 ESRP 2.7 ESRP 5.3.3.1 Regulatory Guide 1.23, Revision 1	Provide a justification for using Wilkes-Barre Scranton meteorological data instead of site-specific data, including how these data are representative of the BBNPP site, and how these data meet Regulatory Guide 1.23 Revision 1 specifications for onsite meteorological measurements.	ESRP 5.3.3.1 directs staff to evaluate various aspects of vapor plumes from cooling towers, such as plume length and frequency, solids deposition, ground-level humidity increase and fogging, cloud shadowing, and additional precipitation. Onsite meteorological data measurements are used in these evaluations. Section 5.3.3.1.1 of the ER indicates that dry bulb and dew point measurements from Wilkes-Barre Scranton are used in the analysis. Justify the representativeness and use of these data in this analysis, including whether the data meet regulatory guidance (Regulatory Guide 1.23 Revision 1) specifications for onsite meteorological measurements.
MET5.3-2 ESRP 2.7 ESRP 5.3.3.1	Identify the closest upper-air station and resolve the apparent inconsistency in the ER in which both the Albany and Buffalo stations are described as being the “closest” representative upper-air station. As an alternative, identify a preferred upper-air station that is expected to be more representative of the BBNPP site. Provide updates of any analyses which use the upper-air data if another station is chosen as being representative of the BBNPP site.	Section 5.3.3.1.1 of the ER states that twice-daily soundings from Albany, NY are used in the SACTI analysis because Albany is the “closest” upper-air station. However, Section 2.7.4.4 of the ER describes Buffalo, NY as being the “closest” representative upper-air station. Resolve this apparent inconsistency. Is there a preferred upper-air station that is expected to be more representative of the BBNPP site? Consider impacts on analyses which use the upper-air data.
MET5.3-3 ESRP 5.3.3.1	Provide the SACTI input/output files for staff confirmatory analysis.	In accordance with ESRP 5.3.3.1, the NRC staff intends to perform a confirmatory analysis of impacts from cooling tower plumes. NRC staff will evaluate the applicant's SACTI model inputs, run the code, and compare the results with applicant's model output files. Therefore, provide in electronic format the input and output files for the SACTI code.
MET5.3-4	Provide the location of the Essential Service Water Supply System (ESWS) and height of ESWS	ESRP 5.3.3.1 directs staff to evaluate impacts associated with cooling tower plumes. In the ER, the four smaller ESWS mechanical draft cooling

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
ESRP 5.3.3.1	towers above ground level relative to nearby structures and roads. Provide an assessment of the potential for increases in ground-level fogging and icing due to the ESWS cooling towers being physically closer to the ground than SSES cooling towers.	towers are qualitatively dismissed as having little impact, especially when compared to the larger CWS cooling towers. Provide justification for this statement, considering the ESWS cooling towers are considerably shorter and therefore could contribute to ground-level fogging and icing in the immediate vicinity of the cooling towers.
MET5.3-5 ESRP 5.3.3.1	Resolve the apparent inconsistency between the description of the maximum solid deposition in Section 5.3.3.2.1 and Table 5.3-9 of the ER. Provide a downwind distance and direction for the maximum deposition value.	ESRP 5.3.3.1 directs staff to review solids deposition (i.e., drift) in the site vicinity. The ER reports two values for solids deposition; resolve this apparent inconsistency.
MET6.4-1 ESRP 2.7 ESRP 6.4	The SSES meteorological tower is within five obstruction heights of the existing SSES cooling towers. In Section 6.4.1.6 of the ER, a study is mentioned that concludes the cooling towers' effect on wind speed measurements is minimal. Provide the details of the study and explain the reasons for the conclusion that "the impact of the cooling towers on wind speed measurements is minimal and the effect on wind direction measurements is nearly non-existent."	ESRP 2.7 and 6.4 states that for "no discernable influence on measurements, towers should be located at least ten obstruction heights away from major obstructions. For towers located more than five obstruction heights away from major obstructions, the influence should be minimal." The SSES meteorological tower is within five obstruction heights of the SSES cooling towers. In Section 6.4.1.6 of the ER, a study is mentioned (but not referenced) which concludes that the cooling towers do not appreciably affect wind measurements made on the SSES meteorological tower. Provide justification for this conclusion.



**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
MET6.4-2 ESRP 6.4	In Section 6.4.2 of the ER, the proposed operational meteorological program for the BBNPP site is described. As shown in Figure 6.4-1 of the ER, a new meteorological tower will be constructed and this tower will be within ten obstruction heights of both the existing SSES and the proposed BBNPP cooling towers, where influence to wind measurements may be possible. Provide justification that the location for the BBNPP meteorological tower is adequate for supporting operations at the BBNPP site.	ESRP 6.4 directs staff to evaluate the operational meteorological monitoring program. Section 6.4.2 of the ER describes the proposed operational meteorological program, which includes a new BBNPP meteorological tower. Figure 6.4-1 shows that the proposed BBNPP meteorological tower will be within ten obstruction heights of both the SSES and BBNPP cooling towers, where influence to wind measurements may be possible. Provide justification that the proposed location for the BBNPP meteorological tower is adequate for supporting operations at the BBNPP site (i.e., will be no more than minimally affected by the SSES and BBNPP cooling towers.)

**Alternatives**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
ALT9.3-1 ESRP 9.3 10 CFR 51.45(b)	Provide a detailed description of the alternative site screening process documentation that supports the selection of the alternatives sites listed in the ER, including a description of the criteria used to rank alternative sites.	ESRP 9.3 indicates that the applicant's process for identifying alternate sites for evaluation is acceptable if <i>"the applicant has employed a practicable site-selection process with the principal objective of identifying candidate sites that would be among the best that could be reasonably found for the proposed plant"</i> and the process is ultimately supportive of a determination that there are or are not obviously superior sites to the proposed site. More detail is needed regarding the screening criteria and ranking system.
ALT9.3-2 ESRP 9.3 10 CFR	Provide the detailed maps of the proposed site and all alternatives sites that show floodplains (100 & 500 year), wetlands, and prime or unique farmland	These environmental factors were used in the alternative site screening process, and have specific regulatory authorities for their protection. ESRP 9.3 indicates that such data should be provided on maps of adequate scale and detail.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
51.45(b)		
ALT9.3-3 ESRP 9.3	Provide an assessment of any low flow augmentation alternatives identified through the Susquehanna River Basin Commission (SRBC) permitting process.	If the SRBC requires low flow augmentation beyond water purchase, describe such action(s) at location(s) of low flow augmentation storage (e.g. new reservoirs, mine waste water, purchase) and the impacts associated with such actions..
ALT9.3-4 ESRP 9.3 10 CFR 51.45(b)	Address the effect on the alternative site ranking if the State identifies Walker Branch as a protected trout stream.	The State has clearly indicated that if the stream is designated (June 2009 forecast for determination) as trout waters of the State, then associated wetlands would be considered of “Exceptional Value” and removal of these wetlands may not be allowed by the State for the purpose of construction of BBNPP. Address whether there would be a change in the relative ranking of alternative sites, or the potential for another site to be environmentally preferable or obviously superior resulting from this designation if/when it occurs.
ALT9.3-5 ESRP 9.3 10 CFR 51.45(b)	Provide a docketable version of the information provided during the audit on the availability of services at the alternative sites.	Availability, or unavailability, of services such as potable water, electrical power, and sanitary waste water treatment affects the comparison of alternative sites and assessment of the impacts of the proposed action at each site as provided under ESRP 9.3.

***Aquatic Ecology***

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
AE2.3-1 ESRP 2.3.1	Provide physical descriptions of and clarify differences between the hydrology and aquatic ecology sections for	The ER hydrology and aquatic ecology sections specify different numbers of waterbodies on the site and use different names for apparently identical waterbodies or the same names for apparently

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
10 CFR 51.71(d)	<ul style="list-style-type: none"> <li>Unnamed Tributaries 1, 2, and 3; their correct locations, flow frequency (perennial, intermittent), flow paths, and drainage areas</li> <li>East Fork of Walker Run; its location, drainage area, relationship to mainstem Walker Run or other resources on or near the site</li> <li>all onsite ponds; the numbers, names, locations, and hydrological descriptions</li> </ul>	different water bodies on the site.
AE2.3-2 ESRP 2.3.1 10 CFR 51.71(d)	Provide a description of the ecological resources associated with the North Branch Pennsylvania Canal.	The ER variously refers to a canal as the North Branch Canal, North Branch Pennsylvania Canal, and North Canal. The proposed construction and operation of the BBNPP could affect the ecological resources in this canal.
AE2.3-3 ESRP 2.3.1 10 CFR 51.71(d)	Provide the correct water depth (as feet below a standard reference point) at the intake and discharge areas in the Susquehanna River.	The bathymetry of the Susquehanna River is provided as feet above mean sea level. The text indicates that the riverbed elevations near the intake range from 473 to 484 ft. Figure 2.3-11 shows the contour range at the intake site to be from 476 to 490 ft. The 473 ft contour is a small area about 200 ft south of the proposed intake site. The depth of the discharge listed in Ch. 3 differs from that in Ch. 2.
AE2.4-1 ESRP 2.4.2 10 CFR 51.71(d)	Provide information about any aquatic disease vectors or pests, such as black flies or <i>Flavobacterium</i> , but excluding the nuisance species described, that may occur on the site or in the Susquehanna River near the site	
AE2.4-2	Provide information about the occurrence of the	

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
ESRP 2.4.2 10 CFR 51.71(d)	quagga mussel ( <i>Dreissena bugensis</i> ) in the Susquehanna River	
AE2.4-3 ESRP 2.4.2 10 CFR 51.71(d)	Provide more detailed information about existing natural and anthropogenic stresses, such as acid mine drainage, Marcellus Shale gas extraction, urban development, invasive species, and climate change, on the onsite streams and ponds and the Susquehanna River Basin.	The ER sections mention some for the stresses but the staff need additional detail for evaluation.
AE2.4-4 ESRP 2.4.2 10 CFR 51.71(d)	Provide a list of the fish species identified from the Susquehanna River samples included in ER Tables 2.4-16 to 2.4-19. Include the genus and species names for each identified species.	The common names were used; please include the scientific names.
AE2.4-5 ESRP 2.4.2 10 CFR 51.71(d)	Provide a statement about the importance of recreational fishing in the BBNPP area (e.g., 6-mile area), including any of the recreational species in the Susquehanna River or North Branch Canal that are regulated by the State.	Recreational fishing was briefly described in the ER. Please indicate its importance.
AE3.4-1 ESRP 3.4.2 10 CFR 51.71(d)	Provide the spacing between the bars on the debris grating.	Debris grating bar spacing is necessary to be able to correctly evaluate the potential for impingement or entrainment.
AE3.4-2	Discuss the design of the discharge pipe and resolve apparent inconsistencies within the ER and	There are various discussions in the ER text that indicate different lengths for the discharge pipe. The text (Ch. 3) describes the cooling

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
ESRP 3.4.2  10 CFR 51.71(d)	with the FSAR regarding, <ul style="list-style-type: none"> <li>the length of the diffuser and of the total pipeline as it extends into the river</li> <li>the number of ports</li> <li>the width of the concrete pad that will support the discharge pipeline anchors</li> <li>the height of the pad above the river bottom</li> <li>any planned burial of the discharge pipe in the Susquehanna River</li> </ul>	system discharge pipe as extending 212 ft from shore with a diffuser that is 106.5 ft long from first port to last with 72 4-in.-diameter ports spaced at 1.5-ft intervals. The text in ER Ch. 5 describes a 120-ft-long diffuser, which would give a total pipe length of 332 ft. The text on ER Rev 1, p. 5-22 describes the pipe length as 310 ft. The FSAR (p. 2-1132) describes a 200 ft pipe. Figure 3.4-6 appears to show the diffuser as being only 40.5 ft from first port to last with 28 4-in.-diameter ports spaced at 1.5-ft intervals. Note also that text in aquatic ecology impacts seems to differ (ER Rev 1, p.4-45) but is close to dimensions in ER Chapter 5.
AE3.4-3  ESRP 3.4.2  10 CFR 51.71(d)	Discuss the path of the proposed BBNPP blowdown line and the discharge pipeline into the Susquehanna River. Indicate the entrance point into the river, the relationship of the line to the shoreline, the terminus of the line, the position of the SSES blowdown discharge line, the orientation to the shoreline, and the location of the terminus.  Provide revised Figures 3.4-3 and 3.4-11 that show the correct pathways and relationships.	ER Figures 3.4-3 and 3.4-11 show the path of the proposed BBNPP blowdown line and the discharge into the Susquehanna River. However, the last portion of the path differs between the two figures with one (3.4-3) showing the line entering the river perpendicular to shore and the other (3.4-11) showing the line entering the river at a slight downstream angle. These figures show different entrance points into the river and possibly indicate different disturbance pathways for the pipeline installation.
AE3.4-4  ESRP 3.4.2  10 CFR 51.71(d)	Provide information about the placement of riprap around the discharge diffuser. Include the areal extent of the riprap that would be placed around the diffuser, the type and size of material that would be used (if known), and the thickness of the riprap layer that would be installed. Describe the potential impacts to the Susquehanna River of this	ER Section 3.4.2.2 (p. 3-29) states that "Riprap will be placed around the discharge diffuser to resist potential erosion." Please discuss this placement as a potential impact to the Susquehanna River.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
	riprap placement.	
AE4.3-1 ESRP 4.3.2 10 CFR 51.71(d)	Provide information about the potential for colonization of retention and stormwater basins by aquatic flora and fauna, particularly nuisance species.	The proposed new unit will include a large retention basin to collect water before discharge into the Susquehanna River. Stormwater basins would be used to help control runoff. Please discuss the potential colonization of these waterbodies.
AE4.3-2 ESRP 4.3.2 10 CFR 51.71(d)	<p>Provide more detailed information about the relocation of a section of Walker Run, specifically</p> <ul style="list-style-type: none"> <li>• mapping the locations of the section to be filled, the section to be built, any tributaries that might be affected, and the location of Market Street.</li> <li>• the length of the constructed section versus that of the section that would be filled</li> <li>• the consideration of recent runoff patterns (versus the historic patterns described in ER Section 2) in the redesign of Walker Run and any other waterbodies that would be modified by the proposed actions</li> <li>• the Natural Channel Design method</li> <li>• the potential effects of relocating Walker Run closer to Market Street versus its present location.</li> <li>• Walker Run location and characteristics of the reference channel mentioned on ER Rev 1 page 4-41</li> <li>• the time of year that the stream relocation</li> </ul>	The precipitation data presented in the ER are about 28 to 38 years old. Water budgets evaluated for three drainage basins feeding the North Branch of the Susquehanna River were based on data at least 28 years old. Please provide and analyze more recent data.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
	<p>would occur and its potential effects on recolonization of the new channel</p> <ul style="list-style-type: none"> <li>• the potential rescue of fish in the section of Walker Run to be relocated</li> <li>• recent runoff patterns being considered in the redesign of Walker Run and any other waterbodies that would be modified by the proposed actions and the ability of the rebuilt Walker Run to handle current or future flows if they are larger than the old ones presented in the ER.</li> <li>• mitigation for each affected stream in accordance with the Corps of Engineers final mitigation rule, published April 10, 2008.  <a href="http://www.usace.army.mil/CECW/Pages/final_cmr.aspx">http://www.usace.army.mil/CECW/Pages/final_cmr.aspx</a></li> </ul>	
<p>AE4.3-3  ESRP 4.3.2  10 CFR  51.71(d)</p>	<p>Provide more detailed information about the construction of the intake system, specifically:</p> <ul style="list-style-type: none"> <li>• whether bedrock excavation is necessary;</li> <li>• should bedrock excavation be necessary, discuss the potential use of blasting, precisely where excavation would occur, the process by which that would occur, and the potential impacts associated with that process;</li> </ul>	<p>First Bullet: ER Rev 1, Page 4-45 has text that reads “Intake construction will require excavation into the bedrock below streambed elevation” and text on page 4-45 reads “Blasting should not be necessary since both the intake and discharge structures will be constructed in locations in which only the river bed overburden, not the bedrock, will need to be penetrated”.</p>

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
	<ul style="list-style-type: none"> <li>the amount of material that would be excavated, the depth to which the river bottom within the cofferdam would be excavated, the site location on which the material would be disposed, the risk of introducing contaminants into the environment because of the excavation, and the area, in square feet, of impacts to Waters of the U.S. as a result of the cofferdam installation;</li> <li>the area of the Susquehanna River that would be impacted versus the land area impacted;</li> <li>any effects on the Susquehanna Riverlands Preserve by construction of the intake.</li> </ul>	<p>Third Bullet: ER Rev 1 page 4-12 states that material would be moved to a spoils area outside designated wetlands. Please identify the location.</p> <p>Fourth Bullet: ER Rev 1; p. 4-29 states that 0.7 ac in the Susquehanna River would be disturbed. This seems to conflict with Table 4.1-1 that lists the total area impacted as 0.7 ac, including forest and wetlands; and the calculations of disturbed area in Section 4.3.2.2 (ER Rev 1, p. 4-45). Please clarify.</p> <p>Fifth Bullet: ER Rev 1, p. 4-31 states “The 1,200 ac (486 ha) Susquehanna Riverlands Environmental Preserve was also identified as an important habitat as this area encompasses a wide variety of upland and wetlands habitats along both sides of the Susquehanna River, and includes a 400 ac (162 ha) public recreation area. Site development within this area will consist of surface water intake and blowdown related facilities.” Please describe the construction impacts on the Susquehanna Riverlands Environmental Preserve.</p>
AE4.3-4 ESRP 4.3.2 10 CFR	Provide information about use of cofferdams to aid in the installation of the intake system, the outfall pipeline, and the diffuser:	ER Rev 1, p. 3-27 (section 3.4.2.1) states that the cofferdam would be installed from shore, but that sections farther out in the river might be installed by barge or from the top of the cofferdam.



**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
51.71(d)	<ul style="list-style-type: none"> <li>describe how the cofferdam would be installed and how would it be anchored to the bedrock;</li> <li>if a barge would be used, describe the type of barge (vessel operated, jack-up) and the potential impacts from its use;</li> <li>if pile driving is used, describe the process including details about the sheet pile type, any support piers, and the type of hammer.</li> <li>describe the potential noise impacts to aquatic organisms in the river.</li> <li>describe any surveys for the occurrence of important freshwater mussel species and any steps that would be taken to reduce possible impacts to the green floater and yellow lampmussel and other mussels of concern;</li> <li>describe any additional disturbance that would occur when the cofferdam is removed and the area of this disturbance;</li> </ul>	<p>ER Rev 1, pp. 4-12; 4-52 mentions pile driving during construction. Describe the potential impacts from this activity to aquatic organisms.</p> <p>ER Rev 1; p. 4-45 states the when the cofferdam is removed, an additional area would be disturbed such that total disturbed area is 26,400 ft<sup>2</sup> (0.61 ac). Please describe this area and how it would be disturbed.</p>

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
	<ul style="list-style-type: none"> <li>Provide details about how the excavation of the trench for the diffuser pipeline would be accomplished.</li> </ul>	
AE5.3-1 ESRP 5.3.1.2 10 CFR 51.71(d)	Describe the frequency of the proposed maintenance dredging of the intake area, the method to be used, the potential use of cofferdams, and the disposal of the dredged material. Indicate whether maintenance dredging will be included in the construction permit obtained from the U.S. Army Corps of Engineers (USACE).	ER Rev 1, p. 5-18 states that maintenance dredging of the intake area may be necessary. Please elaborate.
AE5.3-2 ESRP 5.3.1.2 10 CFR 51.71(d)	Provide estimates of survival for organisms impinged or entrained by the cooling water system (intake/discharge) and the potential plans for, and impacts of, recirculating heated effluent.	Provide estimates of survival for organisms passing through the cooling system and the potential impacts of recirculating heated effluent.
AE9.3-1 ESRP 9.3 10 CFR 51.45(b)	<p><u>Montour Alternative Site.</u></p> <p>Describe the nature of the river bottom at the Montour site to support the statement that dredging of sediment would probably be required. Describe whether or not cofferdams and excavation would be used.</p> <p>Describe the range of water depth at the Montour intake/discharge site.</p>	ER Rev 1, p. 9-64 states that dredging of <u>sediment</u> probably would be necessary at the Montour site and the impacts would be typical for dredging sediment. How does the condition of the Susquehanna River bottom in this area support the statement? The ER wording suggests that the river bottom and the construction process would be different for the Montour site as compared to the Bell Bend site, where the installation would call for using cofferdams and excavation (later text about Montour also mentions cofferdams). The river bottom at the BBNPP site is very rocky.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
	<p>Describe the amount of impervious or nearly impervious surface that would be added to the site.</p> <p>Describe any open-water ponds, creeks (including Chillisquaque Creek) or other water features and direct or indirect impacts to these features by construction, including lineal feet or acreage of impacts.</p> <p>Describe the potential impact of a new plant to yellow lampmussel (State S3S4) that is listed in Table 9.3-1.</p> <p>Provide a copy of the report documenting the threatened and endangered species at the Montour Site. "EDR, 2008a. Environmental Data Resources Incorporated, Montour Site Inquiry Number 2290046.18S, August 12, 2008."</p> <p>Describe any commercial or recreational fisheries near the proposed intake/discharge areas in the west branch of the Susquehanna River and any nuisance species (e.g., zebra mussel, <i>Corbicula</i>) in the area.</p>	<p>ER Rev 1, p. 9-64 states that "According to the EDR database, no federally-listed or state-listed threatened or endangered species are located on site (EDR, 2008a)." However, the yellow lampmussel (State-listed as S3/S4) is listed in Table 9.3-1. Please discuss.</p> <p>Discuss fisheries at the Montour site, and the occurrence of nuisance species.</p>

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
<p>AE9.3-2</p> <p>ESRP 9.3</p> <p>10 CFR 51.45(b)</p>	<p><u>Martin's Creek Alternative Site.</u></p> <p>Describe the nature of the river bottom at the Martin's Creek site and describe whether dredging of sediment would be needed. Describe whether or not cofferdams and excavation would be used.</p> <p>Describe construction methods for the intake system versus the discharge system.</p> <p>Describe any open-water ponds, creeks or other water features and direct or indirect impacts to these features by construction, including lineal feet or acreage of impacts.</p> <p>Provide a discussion of whether the dwarf wedge mussel occurs in the river at the Martins Creek Site, and if it is there, the potential for impacts related to installation (including dredging) of the Circulating Water System, and the potential that the discharge plume could affect the mussel.</p> <p>Provide information from the study "Dwarf Wedge Mussel (DWM) Habitat Study on the Upper Delaware" conducted by USFWS.</p> <p>Provide a copy of the report documenting the T&amp;E</p>	<p>ER Rev 1, p. 9-71 states that construction-related impacts would be similar to those at the Montour site with respect to dredging, or any other activity related to intake/discharge construction. Provide information about the Delaware River bottom to support the supposition that impacts at the Martin's Creek site would be similar to Montour. Observations made during the alternative site visit indicated that river flows were different at the intake and discharge areas. The Delaware River at the proposed discharge location is swiftly flowing with noticeable small rapids. It is likely that the river bottom here is primarily rocky and installation of the discharge would be similar to that for BBNPP. The river flow is fairly slow at the location of the proposed intake located opposite the former coal plant. The river bottom here may have accumulated some sediment that would need dredging or excavation to install the intake system. Please describe the actual conditions.</p> <p>Buckhorn Creek, which occurs on part of the site, was observed during the alternative site visit. Describe it.</p> <p>The text (ER Rev 1, p. 9-71) states that there are no Federally endangered species on the Site. Later (p. 9-71), the text mentions the Federally endangered <u>dwarf wedge mussel</u> as occurring in the Delaware River in Warren County and discusses potential impacts to larvae because of entrainment. Explain.</p> <p>PPL (and the Corps) is involved in the Dwarf Wedge Mussel study conducted by USFWS. The study was to be completed in 2008.</p> <p>Assess impacts to the Foul Rift Natural Heritage Priority Site that is</p>

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
	<p>species at the Martins Creek Site. “EDR, 2008b. Environmental Data Resources Incorporated, Martins Creek Site Inquiry Number 2290046.27S, August 12, 2008.”</p> <p>Describe the <u>Foul Rift Natural Heritage Priority Site</u> and its relation to the proposed site.</p> <p>Describe the range of the Atlantic sturgeon and shortnose sturgeon in the Delaware River and indicate whether either species has been found near the Martins Creek site.</p> <p>Describe any commercial or recreational fisheries near the proposed intake/discharge areas in the Delaware River and the presence of any nuisance species (zebra mussel, <i>Corbicula</i>) in the area.</p> <p>Describe the potential effluents from the CWS construction at Martin’s Creek and Best Management Practices to manage them.</p> <p>Provide any impingement or entrainment data available from the retired coal plant that would allow estimation of potential impacts from the proposed plant.</p>	<p>shown in the January 27, 2009 letter from NJ DEP to the NRC.</p> <p>Identify potential construction effluents and discuss possible BMPs to manage them.</p>

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
<p>AE9.3-3</p> <p>ESRP 9.3</p> <p>10 CFR 51.45(b)</p>	<p><u>Sandy Bend Alternative Site</u></p> <p>Describe any open-water ponds, creeks or other water features and direct or indirect impacts to these features by construction, including lineal feet or acreage of impacts.</p> <p>Describe the nature of the river bottom at the Sandy Bend site and describe whether dredging of sediment would be necessary. Describe whether or not cofferdams and excavation would be used.</p> <p>Provide more detailed information about “ephemeral/fluctuating natural pool” community that is listed in Table 9.3-5 and the potential impacts to this community from construction and operation of a new plant.</p> <p>Describe the potential impacts from construction and operation of a new plant to the three state-listed mussel species—the yellow lampmussel (S3S4), the elktoe (S4), and the triangle floater (S3S4)—named in Table 9.3-5.</p> <p>Provide a copy of the report documenting the threatened and endangered species at the Sandy Bend Site. “EDR, 2008c. Environmental Data</p>	<p>ER Rev 1, p. 9-75 states “There are several small ponds located on the site that may not be regulated. Any impacts to these bodies of water would need to be coordinated through USACE and the Commonwealth of Pennsylvania prior to construction activities. Therefore, the impacts to bodies of water at the site would be SMALL.”</p> <p>ER Rev 1, p. 9-75 states that construction-related impacts would be similar to those at the BBNPP and the Montour sites. Explain why dredging, or any other activity related to intake/discharge construction for Sandy Bend is similar to such activities at the BBNPP and Montour sites. Describe the Juniata River bottom to support the supposition that impacts would be similar to BBNPP or Montour. The river current in this area appears very slow, so it is likely that the river bottom is muddy in the area. The river bottom near shore appeared muddy.</p> <p>ER Rev 1, p. 9-75 states “No federally-listed or state-listed species are located in the immediate vicinity of the site (EDR, 2008c).” Table 9.3-5 lists “ephemeral/fluctuating natural pool” as state-listed community. Table 9.3-5 also lists three mussel species that are state-listed—the yellow lampmussel (S3S4), the elktoe (S4), and the triangle floater (S3S4). Explain.</p>

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
	<p>Resources Incorporated, Sandy Bend Site Inquiry Number 2290046.36S, August 12, 2008.”</p> <p>Describe any commercial or recreational fisheries near the proposed intake/discharge areas in the Juniata River, including any nuisance species (e.g., zebra mussel, <i>Corbicula</i>).</p> <p>Describe the location, construction and associated impacts of any bridges that need to be built across the Juniata River for access to the plant or for relocation of the railroad.</p>	<p>Assess whether there is a need to build two railroad bridges to accommodate the shifting of the tracks from “behind” the site to the opposite side of the Juniata River.</p> <p>Assess the need to construct a bridge in the river to accommodate a new access road.</p>
AE9.3-4 ESRP 9.3 10 CFR 51.45(b)	<p>Provide a more detailed, site-focused figure for each alternative site that shows the aquatic resources that would be affected by the construction and operation of a new plant.</p> <p>Show the proposed locations of the bridges that would be installed across the Juniata River at the Sandy Bend site.</p>	<p>Figures 9.3-7, 9.3-9, and 9.3-11 are vicinity maps that show a much larger area than is useful for evaluating potential impacts to aquatic resources.</p>

**Cultural Resources**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
------------	------------------------	------------------------------------

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
CR2.5-1 ESRP 4.1.3 ESRP 5.1.3 10 CFR 51.71 (d) 36 CFR 800 36 CFR 63	<p>Provide State Historic Preservation Office comments on all related archaeological and architectural surveys/reports. Letters include, but may not be limited to the following:</p> <ol style="list-style-type: none"> <li>1) April 8, 2008 – initial consultation</li> <li>2) June 5, 2008 – comments on phase 1a</li> <li>3) October 28, 2008 – phase 1b review of architectural resources</li> <li>4) March 2, 2009 – phase 1b review of archaeology</li> <li>5) March 23, 2009 – review of supplemental phase 1b.</li> </ol>	<p>Five consultation letters from the PA SHPO were available at the audit. These should be reviewed in consultation with the SHPO for content sensitivity and provided.</p>
CR2.5-2 ESRP 4.1.3 10 CFR 51.71 (d) 36 CFR 800	<p>Identify historic properties within the project area that can be avoided and describe the avoidance procedures.</p>	<p>During site audit, efforts to avoid adverse impacts to specific sites were discussed. Discuss specific actions to avoid adverse impacts.</p>
CR 2.5-3 ESRP 4.1.3 ESRP 5.1.3 10 CFR 51.71(d)	<p>Provide schedule for Phase II and Phase III investigations for NRHP eligible or listed archaeological sites that cannot be avoided or for which avoidance is uncertain. Mitigation measures would include data recovery investigations developed in consultation with NRC and the SHPO on those sites determined to be NRHP eligible.</p>	<p>Seven archaeological sites with potential to be listed on the NRHP were identified during the Phase I survey. The impacts the project would have on these potential historic properties cannot be determined until the Phase II NRHP evaluations have been completed. Sites determined to be eligible for the NRHP would require data recovery investigations to mitigate adverse impacts.</p>



**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

<b>RAI Number</b>	<b>Question Summary (RAI)</b>	<b>Full Text (supporting information)</b>
36 CFR 800 36 CFR 63		
CR 2.5-4 ESRP 4.1.3 ESRP 5.1.3 10 CFR 51.71(d) 36 CFR 800	Provide the schedule for completion of criteria of effects report for historic architectural resources.	Ten historic properties within the project area of potential effect were identified that may be NRHP eligible. The criteria of effects report would determine if the BBNPP would have adverse impacts to these properties. Describe the nature of the impacts the project would have on these 10 properties.
CR 2.5-5 ESRP 2.5.2 ESRP 2.5.3 10 CFR 51.71 (d) 36 CFR 800	Provide copies of all consultation letters with and subsequent responses from Native American Tribes.	Provide copies of all consultation correspondence with Native American Tribes.
CR 2.5-6 ESRP 2.5.2 ESRP 2.5.3 10 CFR 51.71 (d) 36 CFR 800	Provide copies of all consultation letters with other Interested parties. Explain how Interested Parties were informed and contacted. Provide list of Interested Parties who have expressed interest or concerns regarding cultural impacts and copies of any correspondence.	The consultation process is an important component of the Section 106 consultation process under Advisory Council procedures. Describe the efforts to contact members of the community to discover potential concerns and reasonable concerns.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
CR 2.5-7 ESRP 4.1.3 and ESRP 5.1.3 10 CFR 51.71 (d) 36 CFR 800 43 CFR 10	<p>In consultation with the NRC and the Pennsylvania SHPO develop a management plan for management of cultural resources. The plan should address the following matters:</p> <ol style="list-style-type: none"> <li>1) Procedures for dealing with inadvertent discoveries including human remains, terrestrial archaeological sites, and above ground historic structures, and procedures for avoiding or mitigating adverse impacts.</li> <li>2) Procedures for assessing potential adverse impacts to cultural resources on BBNPP property located outside of the current project area.</li> <li>3) Procedures for pre-job briefing for BBNPP employees and contractors on how to identify cultural resources and what actions are to be taken if cultural resources are found.</li> <li>4) Procedures for consulting with NRC and the PA SHPO.</li> <li>5) Consideration of potential impacts to cultural resources during pre-construction ground disturbing activities as well as construction activities.</li> </ol>	<p>During the Audit several cultural resource issues and concerns were identified that dealt with inherently unknown variables. These include how to deal with inadvertent discoveries of human remains or other cultural resources during daily operations, how to ensure impacts to cultural resources are considered if there are future land acquisitions, and how to ensure that the applicant's staff is familiar with cultural resource management requirements. Please describe how these matters will be treated.</p>

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
CR 2.5-8 ESRP 4.1.3 and ESRP 5.1.3 10 CFR 51.71 (d) 36 CFR 800	Explain what efforts were taken to identify cultural resources at proposed alternative sites as described in the ER. List what National Register listed, eligible or potentially eligible properties have been identified at the alternative sites.	At the site audit, the need to document potential impacts to cultural resources in the proposed alternative sites was discussed. The applicant provided a reference to reports that documents the baseline reconnaissance level survey data on cultural resources in or near the proposed alternate site locations. Provide these reports for review.

***General and Site and Technical Overview***

RAI Number	Question Summary (RAI)	Full Text (supporting information)
STO1-1	Provide all ER references (electronic format if available).	Received AREVA publicly available documents. Still need non-AREVA sections (2.3.1, 2.3.2, 2.3.3, 2.6)
STO2.1-1 ESRP 2.2, 2.4, 2.5, and 4.3	Provide all Geographic Information System (GIS) and/or CAD data/databases used to support the ER analysis and results including existing and proposed conditions as appropriate. The data should generally include, but are not limited to: <ul style="list-style-type: none"> <li>All existing and proposed site infrastructure data (roads, buildings, intake/discharge pipelines, transmission lines, utility right-of-ways/transmission corridors, power blocks, switchyards, pipeline corridors, cooling and retention ponds, dams,</li> </ul>	PNNL has developed a GIS tool to assist in the conduct of impact assessments and to create figures where necessary. Databases used by the applicant are typically requested for addition to this GIS tool.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
	<p>canals, rail lines, monitoring/instrument stations, etc.)</p> <ul style="list-style-type: none"> <li>• Data related to preconstruction activities (associated with the construction of cooling ponds, haul roads, dredging, and other aspects of infrastructure necessary to support the construction of the BBNPP that will result in a discharge of dredged or fill material into Waters of the United States (i.e. requiring a Department of the Army Section 404/Section 10 permit).</li> <li>• Location data (official property boundary, official unit point location, exclusion area boundary, and other relevant boundaries on-site or regionally)</li> <li>• All surface and groundwater hydrologic data (watershed/subbasin boundaries, stream/river channels, springs, sinkholes, flood boundaries, reservoir boundary, site stormwater drainage, levees, hydrogeologic study boundaries, aquifers, potentiometric contours, well locations, surface water monitoring sites, etc.)</li> <li>• All terrestrial and aquatic ecological data (wetlands, ponds, terrestrial and aquatic sampling sites, wildlife/habitat areas, land use/land cover, and threatened and endangered species locations). Data on wetland type and acreage amount.</li> <li>• Terrain and bathymetric data (LiDAR,</li> </ul>	

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
	<p>contours, river cross sections, bathymetric point samples, etc.)</p> <ul style="list-style-type: none"> <li>• Socioeconomic data (sector data at various radii, census blocks with attribute data including low income and minority data, State/county park recreational area boundaries, trails, water trails, wildlife management units, traffic count data, commuter routes, etc.)</li> <li>• Geology and soils data (site and vicinity data, faults, folds, seismic activity, etc.)</li> <li>• Alternative (candidate) site data (point locations, proposed site boundary, proposed infrastructure, etc.).</li> </ul>	
STO2.1-2 ESRP 2.1	Provide a revised site map clearly showing the boundaries of the east and west parcels referred to on Page 2-6 of the ER.	
STO2.2-1 ESRP 2.2 10 CFR 50.51(c)	Provide an assessment of the need for upgrading any portions of the exiting rail spur to SSES or any portions of the main line including any road crossings or bridges.	State whether there is any need to upgrade the rail spur or mainline due to the large size of components for the U.S. EPR. If so, provide an assessment of the impacts of such an upgrade.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
STO2.3-1 ESRP 2.3 10 CFR 50.51(c)	Provide the location of the disposal site for excess excavated material (soils), the planned routes for transporting excess material and any upgrades necessary for these routes, and any planned measures for erosion control and stabilization of the disposal site at project completion	Identify the proposed disposal site, which needs to be large enough to dispose of approximately 3 million cubic yards of excavated material.

***Geology***

RAI Number	Question Summary (RAI)	Full Text (supporting information)
GEO2.6-1 ESRP 2.6 10 CFR 100.20(c)	Provide a characterization of the economic viability of extracting natural gas in the Devonian period Marcellus shale that underlies the proposed BBNPP Site.	

***Hydrology***

RAI Number	Question Summary (RAI)	Full Text (supporting information)
H2.3-1 ESRP 2.3-2 10CFR51.70(b)	Provide the daily withdrawal and return flow rates from SSES Units 1 and 2 for a two-year period. This period should span times when both units are operating as well as an outage/refueling.	The applicant's experience with water withdrawals at the nearby SSES, and their interaction with the SRBC for additional withdrawals from the Susquehanna River, will inform the staff on how agencies might handle similar requests involving the BBNPP.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
	In addition, provide the application to the SRBC for the Extended Power Uprate for SSES, and the SRBC response.	
H2.3-2 ESRP 2.3-2 10CFR51.70(b)	Provide additional detail regarding withdrawal quantity and frequency of use from users identified on ER Figures 2.3-66 and 2.3-67.	Staff discussed this request and ER Figures 2.3-66 and -67 with the applicant during the site audit.
H3.4-1 ESRP 3.4.1 10CFR51.70(b)	Provide Sargent & Lundy report SL-009459 on the raw water system.	Staff needs quantitative information on the operation of the BBNPP intake structure, including the quantity and type of chemicals to be used for de-fouling, the de-icing procedures, and debris clearing operations for the trash rack.
H3.6-1 ESRP 3.6.1 10CFR51.70(b)	Provide supplemental information on the intake source water quality data presented in ER Table 3.6-3. Include information on seasonal values of chemical analytes in intake and receiving waters.	ESRP 3.6.1 identifies the need for average, maximum, and seasonal variations of principal constituents of intake and receiving waters and any minor or trace materials that may be of environmental relevance. The ER reports only yearly-average values.
H3.6-2 ESRP 3.6.1 10CFR51.70(b)	Provide "Table A5.5: Anticipated water chemical concentrations in Susquehanna River downstream of BBNPP discharge" from calculation AREVA 32-9084971-001. This calculation was reviewed during the site audit.	This calculation was titled, "EIR Calc Sheet Water Parameters for BBNPP." The response should include information on the procedures to be used to ensure all effluents will be treated, controlled and discharged at concentrations low enough to meet State and EPA effluent limitation guidelines and water-related aspects for new source performance standards.
H4.2-1 ESRP 4.2.1 10CFR51.70(b)	Provide construction reports for the cutoff wall that will surround the nuclear island and Essential Service Water Emergency Makeup Supply (ESWEMS) pumphouse. Requested reports are: (1) "Construction Dewatering Design Bell Bend	Staff needs information on the impact of dewatering of the major excavations for the nuclear island and ESWEMS pumphouse, and the effect of this dewatering on the surrounding groundwater levels and nearby wetlands.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
	Nuclear Power Plant Unistar Nuclear Energy,” Sargent & Lundy Report No. SL-009655 Rev 1, Dated December 27, 2008; and (2) “Construction Dewatering Evaluation Specification No B-4400, BBNPP,” Weaver Boos Consultants, Project 2524301-01, Dated September 8, 2008. Also provide all input files necessary for the staff to duplicate the Visual MODFLOW results.	
H5.2-1 ESRP 5.2.2 10CFR51.70(b)	Provide information on the statistical calculation of low flow conditions such as the 7 day once-in-10-year low flow (7Q-10). Discuss (in quantitative terms if possible) the effect on the estimate of non-stationarity of the measured flow rates.	The applicant presented a statistical analysis of the 7Q-10 flow rate in FSAR 2.4.11. Staff is reviewing the potential effects of non-stationarity of measured flow rates caused by factors such as increased water demand, regulation of flow by dams, and long-term climate cycles. Staff is also reviewing the relationship between low flows near the site and drought management plans for the Susquehanna River basin.
H5.3-1 ESRP 5.3.2.1 10CFR51.70(b)	<p>Provide information related to the calculation of thermal and chemical effluent plumes from the BBNPP and SSES diffusers:</p> <ol style="list-style-type: none"> <li>1) Verification of model results against field data collected by Ecology III.</li> <li>2) Sensitivity study, needed especially for the low flow, winter case. Adjustments to <math>\Delta T</math> (discharge vs. ambient river) for both SSES and BBNPP, bathymetry differences, adjustment of discharges from SSES and BBNPP, low Susquehanna River discharge.</li> <li>3) BBNPP plume calculations run in isolation as well as in combination with the SSES</li> </ol>	This information was developed through several discussions with the applicant's consultant Ed Buchak (ERM Inc).



**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
	<p>plume</p> <p>4) Sargent and Lundy report 2008-06824, "Engineering and economic evaluation of integrated heat rejection cycle, Bell Bend Nuclear Power Plant", Unistar Nuclear Energy, April 2008.</p>	
<p>H6.3-1 ESRP 6.3 10CFR51.70(b)</p>	<p>Provide descriptions of surface water and groundwater monitoring equipment, data collected, measurement schedule, analysis procedures, and data quality objectives for the preapplication, construction, preoperational and operational periods.</p>	<p>Staff needs additional information regarding the number of monitoring wells and surface water stations, what data have been and will be collected, and on what schedule. ESRP 6.3 requests details of all monitoring programs for the preapplication, construction, preoperational and operational periods. The SSES monitoring program includes the number of wells, their locations, and measurement values, stored in a monitoring data base.</p>
<p>H9.3-1 ESRP 9.3 10CFR51.70(b)</p>	<p>Provide a description of all surface water and groundwater users who could be affected by site construction and operation at all candidate alternative sites.</p>	<p>The applicant provided figures and tables at the site audit that gave additional details regarding water users that potentially could be impacted by construction and operation of the alternative sites.</p>
<p>H9.4-1 ESRP 9.4.2 10CFR51.70(b)</p>	<p>Provide information on alternative intake systems considered for the BBNPP site, including intake design and impacts of each type of intake, and why the proposed intake system is the preferred alternative.</p>	
<p>H9.4-2 ESRP 9.4.2 10CFR51.70(b)</p>	<p>Provide information on alternative discharge systems considered for the BBNPP site, including discharge design, impact of each type of discharge, and why the proposed discharge system is the preferred alternative.</p>	

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
H9.4-3 ESRP 9.4.2 10CFR51.70(b)	Provide information on alternatives for water treatment for the BBNPP site, including the circulating water and raw water systems. Include details of chemicals, additives and mechanical treatment, and operating cycles for these systems. Discuss why the proposed treatment system is the preferred alternative.	

***Land Use***

RAI Number	Question Summary	Full Text (supporting information)
LU2.2-1 ESRP 2.2.1 10 CFR 51.45	Provide a revised table that revalidates data in Table 2.2-6.	The applicant stated that they would revalidate information in Table 2.2-6 to assure that product yields/production information in the region is correctly presented.
LU3.7-1 ESRP 4.1 10 CFR 51.45 10 CFR 51, App. A(7)	Provide information on changes in land use from construction and provide a revision of Table 2.2-1 that includes this information.	The applicant stated that they would provide information on changes in land use from construction. Applicant stated that they would revise Table 2.2-1 to add a column with land use change information.
LU4.1-1	Provide information/figure to quantify the area of 100-year and 500-year floodplains affected by	

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

<b>RAI Number</b>	<b>Question Summary</b>	<b>Full Text (supporting information)</b>
ESRP 4.1 10 CFR 51.45 10 CFR 51, App. A(7)	construction.	
LU5.1-1 ESRP 4.1 10 CFR 51.45	Provide copy of figure identifying location of prime farmland on and near BBNPP site and impacts from construction.	During the site audit, the applicant identified that the project would affect 360 acres of prime farmland based on soil types. The applicant stated that they would provide a copy of the prime farmland figure.
LU5.1-2 ESRP 4.1 10 CFR 51.45 10 CFR 51, App. A(7)	Provide information/figure on 100-year and 500-year floodplains on BBNPP site after construction. Provide information on potential downstream land use impacts due to floodplain changes.	

***Non-radiation Human Health, Noise, EMF, Thermophilic Organisms***

<b>RAI Number</b>	<b>Question Summary (RAI)</b>	<b>Full Text (supporting information)</b>
NRHH10.5-1 No ESRP section 10 CFR 51.71(d)	Provide a discussion of cumulative non-radiological human health impacts of construction and operation (including etiological agents, noise, electrostatic effects (electric shock), and electromagnetic field effects) resulting from other activities existing or planned in the area that should be considered in cumulative impacts and define the	

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
	geographical region that was assessed.	

***Radiation Health, Decommissioning, and Uranium Fuel Cycle***

RAI Number	Question Summary (RAI)	Full Text (supporting information)
RHH 4.5-1 ESRP 4.5 and ESRP 5.4-2  10 CFR 50, App. I  10 CFR 20.1301  40 CFR 190	Provide electronic copies of the input and output files for the GASPAR and LADTAP codes used to calculate doses from gaseous and liquid effluents. Provide assumptions and technical bases for the analyses.	The GASPAR and LADTAP calculations used in the ER need to be verified according to NUREG-1555 (ESRP 5.4.2).
RHH 4.5-2 ESRP 4.5 10 CFR 50, App. I 10 CFR 20.1301	Provide input data and input files for code(s) used to estimate construction worker dose. Provide assumptions and access to calculation package(s) used for dose calculations to construction workers. Provide breakdown of doses from gaseous effluents, liquid effluents and direct exposure. Include updated calculations of BBNPP construction worker doses using the projected 2017 ISFSI inventory based on ISFSI storage of SSES fuel with shorter decay times than used for the original calculations in the ER.	Need to perform confirmatory analyses for the construction worker dose results in ER Section 4.5. Provide a breakdown of construction worker doses by pathway.  During site audit applicant indicated that fuels with shorter out of reactor time may be stored in the SSES ISFSI. If this is the case, the direct dose to construction workers should be re-evaluated to assure that doses do not exceed the 10 CFR 20.1301 dose limits for the public.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
RHH 4.5-3 ESRP 4.5 10 CFR 50, App. I 10 CFR 20.1301 40 CFR 190	Explain the difference in the average results from the SSES environmental TLD data (20.8 mR) results and PaDEP SSES TLD data (44.1 mR) from 2004 (most recent PaDEP data available).	Need to understand the reason for the difference to properly evaluate the environmental dose impacts from SSES effluents, direct exposure from the ISFSI and onsite radioactive waste storage.
RHH 5.4-1 ESRP 5.4-2 10 CFR 50, App. I 10 CFR 20.1301 40 CFR 190	Provide the calculation packages used to generate the offsite doses in the ER from gas and liquid effluents, and direct radiation to the MEI, the population dose within 50 miles, and dose to biota. Also provide the calculation package used to show 40 CFR Part 190 compliance for the combined SSES and BBNPP offsite doses from gas and liquid effluents, and direct radiation to both the MEI and the population dose within 50 miles.	Provide the calculation packages to understand approach, assumptions, and details about the calculated doses found in ER Section 5.4 to support confirmatory calculations.

***Socioeconomics, Environmental Justice, Cost Benefit***

RAI Number	Question Summary (RAI)	Full Text (supporting information)
SE2.5-1 ESRP 2.5.1 10 CFR	Address the apparent inconsistencies between data for mean household vs. mean individual income levels in ER Section 2.5.1.1.2 and other parts of the ER.	ER Section 2.5.1.1.2 presents data for mean household income levels in Columbia and Luzerne Counties. In Chapter 4 of the ER, the mean income level presented for individuals is identified at levels that exceed the household values supplied in this section. Since mean individual income levels could not possibly exceed the mean household income

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

<b>RAI Number</b>	<b>Question Summary (RAI)</b>	<b>Full Text (supporting information)</b>
51.71(d)		levels for the same population, this apparent inconsistency should be addressed. Income data impact calculations relating to tax revenue and other economic impacts of the BBNPP.
SE2.5-2 ESRP 2.5.1 10 CFR 51.71(d)	Extend the transient population analysis out from 10 to 50 miles.	
SE2.5-3 ESRP 2.5.2 10 CFR 51.71(d)	Provide a breakdown of the number of construction workers by relevant sub-groups, including iron workers, pipe fitters, and other trades, and the number of unemployed construction workers in the ROI and within a 50-mile radius of the BBNPP.	
SE2.5-4 ESRP 2.5.2 10 CFR 51.71(d)	Provide clarification of how the various jurisdictions interact in the area (e.g., boroughs, townships, etc.).	Identify and describe the political structure of each jurisdiction (e.g., boroughs, townships) with decision making responsibility on issues affecting BBNPP construction and operation. Detail responsibilities by jurisdiction governing permitting, land use, tax and other relevant matters relating to the construction and operation of the BBNPP, and, to the extent feasible, discuss the nature of the interactions these competing jurisdictions must have while addressing these issues.
SE2.5-5 ESRP 2.5.2 10 CFR 51.71(d)	Explain or correct several apparent inconsistencies between text and tables presented in Section 2.5.2.4.  a. Average population densities presented in the ER text appear to contradict data	

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
	<p>presented in Table 2.5-4.</p> <ul style="list-style-type: none"> <li>b. The ER indicates 308,277 existing housing units are located in the ROI while Table 2.5-17 identifies only 172,419.</li> <li>c. ER text identifies 68 apartment/townhouse complexes while Table 2.5-18 identifies 34 units.</li> <li>d. The ER identifies an additional 7 apartment complexes in other counties (Northumberland and Schuylkill) located within the 30 mile radius; however, Table 2.5-18 identifies only 4 such complexes.</li> <li>e. The number of hotels/motels/B&amp;Bs noted in the ER text does not align with values presented in Table 2.5-19.</li> <li>f. The number of apartments noted in the ER text does not equate to those presented in Table 2.5-18.</li> </ul>	
SE2.5-6 ESRP 2.5.2 10 CFR 51.71(d)	Discuss the status of the housing stock in the vicinity of the project since the 2000 Census, including other substantial development projects and expansions.	Discuss whether recent changes in the housing stock in the project vicinity could affect the distribution and impact of the construction and operations workforce.
SE2.5-7	Provide a detailed analysis of the capacity of local public schools in the project vicinity, including identifying the schools in the geographic area	The discussion of school districts is aggregated in the ROI. Provide a more detailed analysis to address local school district capacity and

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

<b>RAI Number</b>	<b>Question Summary (RAI)</b>	<b>Full Text (supporting information)</b>
ESRP 2.5.2 10 CFR 51.71(d)	expecting to receive the greatest population impact from the project. In this analysis, compare the capacity of the local school districts to student enrollment to determine capacity utilization or percentage of use. Also include a comparison of current student to teacher ratios to statewide limits.	utilization, particularly the Berwick Area School District.
SE2.5-8 ESRP 2.5.2 10 CFR 51.71(d)	Provide either service ratios or other measures of adequacy (e.g., comparison to national or state standards or averages) or an assessment of adequacy by local officials for key facilities and services in the proximate communities (police, fire, recreational sites, water, sewer/sewage, medical, education).	Impacts on community facilities are influenced by their existing and projected capacity and availability. Include this information in the assessment discussion.
SE2.5-9 ESRP 2.5.2 10 CFR 51.71(d)	Provide justification for the statement that both surface and groundwater sources in the county provide adequate supply for the population.	
SE2.5-10 ESRP 2.5.4 10 CFR 51.45 10 CFR 51.70	Extend the consideration of Environmental Justice out to a 50-mile radius.	
SE2.5-11 ESRP 2.5.4	Provide information concerning attempts to identify distinctive communities, including characteristics of the Amish, Native American Tribes, and the local region, that may identify them as distinctive	Describe attempts to identify distinctive communities and any information obtained through these contacts.



**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

<b>RAI Number</b>	<b>Question Summary (RAI)</b>	<b>Full Text (supporting information)</b>
10 CFR 51.45 10 CFR 51.70	communities (e.g., historic districts, tourist attractions, cultural resources, and visual resources).	
SE2.5-12 ESRP 2.5.4 10 CFR 51.45 10 CFR 51.70	Provide information regarding charitable non-governmental organizations (NGOs) - e.g., Catholic churches, food bank, United Way – operating in the ROI. Provide information obtained from these NGOs to enhance understanding of low-income and minority populations in the ROI.	Interviews with local officials resulted in the documentation of several NGOs that operate in the ROI. Provide information obtained from these NGOs in order to identify and characterize low-income and minority populations.
SE2.5-13 ESRP 2.5.4 10 CFR 51.45 10 CFR 51.70	Provide detailed data for subsistence practices, particularly agricultural uses, of distinct minority, low income, and distinctive populations to the extent feasible.	Use contacts with local social service agencies, NGOs, and a review of technical literature to document local subsistence activities, to the extent feasible.
SE4.4-1 ESRP 4.4.1 10 CFR 51.45 10 CFR 51.70	Revise text identifying the local network as sufficient to reflect the results of the traffic study by KLD, "Traffic Impact Study Related to the Proposed Construction and Operation of the Bell Bend Nuclear Power Plant, Preliminary Findings Report."	RAI SE4.4-2 presents more detail regarding the issue being raised here. In addition, local officials documented potential issues with the transportation network during the recent site visit and also mentioned that trucks delivering materials during construction might be too large to safely make the turn from Route 11 off Route 93, and that these vehicles may need to be diverted down Route 29 to Danico before turning left onto Route 11. Further, there is no light at the intersection of Route 29 and Route 11 but one may be needed to accommodate more heavy trucks.
SE4.4-2 ESRP 4.4.1 10 CFR 51.45	Section 4.4.1. Table 4.4-2 suggests that traffic at several local interchanges will register very low levels of service (D, E, F) during BBNPP construction. Describe the anticipated improvements in service levels at specific	Table 4.4-2 should be updated to reflect the Level of Service (LOS) given the construction scenario with mitigation measures employed. It is important to assess the relative effectiveness of the proposed measures.

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

<b>RAI Number</b>	<b>Question Summary (RAI)</b>	<b>Full Text (supporting information)</b>
10 CFR 51.70	interchanges gained through implementation of identified mitigation measures.	
SE4.4-3 ESRP 4.4.2 10 CFR 51.45 10 CFR 51.70	Provide consistent in-migration values in percentage terms in Section 4.4.2.	In Section 4.4.2, the ER presents an upper and lower limit on the in-migration value in percentage terms (20-35 percent). These rates differ significantly. Identify a single best estimate and use it as the basis of each calculation that falls out of the analysis – e.g., impacts on local schools, tax impacts.
SE4.4-4 ESRP 4.4.2 10 CFR 51.45 10 CFR 51.70	Provide month-by-month and quarter-by-quarter workforce data during the construction timeframe. Also, provide an estimate of the number of operations workers who would be employed during the construction period.	Late in the construction period, operations workers will be hired and begin training at the new power plant. Build these workers into the construction period employment calculations and all associated calculations, including those related to demand for public services.
SE4.4-5 ESRP 4.4.2 10 CFR 51.45 10 CFR 51.70	In identifying the number of indirect workers as well as income and tax revenue tied to each indirect worker, assume that 100 percent of these indirect workers are already located within the ROI. That is, provide an analysis that assumes that none of the indirect workers would be in-migrants.	Service industry jobs tied to the indirect employment opportunities will most likely be nearly if not entirely filled by the local population.
SE4.4-6 ESRP 4.4.2 10 CFR 51.45 10 CFR 51.70	Discuss the location, number and quality of mobile home parks in the ROI and capacity / percentage of use. Discuss how these would be impacted by construction workforce use of these homes.	
SE4.4-7	Provide hourly wage estimates for service-oriented	Local officials interviewed during the site audit indicated that local service

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

<b>RAI Number</b>	<b>Question Summary (RAI)</b>	<b>Full Text (supporting information)</b>
ESRP 4.4.2 10 CFR 51.45 10 CFR 51.70	industries as opposed to average salary estimates across all industries and report those. Use operations workforce multiplier for operations workforce employed during construction.	industry wages were far below average statewide wage levels. Thus, wages paid in local service industries would be a more appropriate figure to use relative to average salary estimates across all industries.
SE4.4-8 ESRP 4.4.2 10 CFR 51.45 10 CFR 51.70	Provide a revision of average annual salaries that includes overtime.	
SE4.4-9 ESRP 4.4.2 10 CFR 51.45 10 CFR 51.70	Provide annual expenditures on materials, equipment, and outside services during construction.	Sections 5.8.2.4.1 and 5.8.3.2.3 note that PPL Bell Bend, LLC will spend about \$9 million annually on materials, equipment, and outside services. Annual expenditures during construction and operation should be differentiated.
SE4.4-10 ESRP 4.4.2 10 CFR 51.45 10 CFR 51.70	Provide estimates of sales or income tax generated by the BBNPP construction workforce.	Several revenue streams to local jurisdictions will be generated through the construction of the BBNPP. Real estate, income, sales, and other tax receipts will also be generated through wages and salaries earned by the construction workforce and the homes they build or purchase. Provide estimates of these taxes to the region and to the proximate communities.
SE4.4-11 ESRP 4.4.2 10 CFR 51.45 10 CFR 51.70	Please provide data to support the statement 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	

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
	utilization rates for police and fire services and educational facilities.	
SE4.4-12 ESRP 4.4.2 10 CFR 51.45 10 CFR 51.70	Refine the estimated number of children per household based on available SSES work force data.	In the ER, the total number of children per household is calculated by dividing the number of children in Pennsylvania by the number of households. Because the demographics of the construction workforce households would differ from statewide averages (there are retired households included in the statewide average), the number of children per household should be adjusted based on available SSES work force data or other data reflecting the expected demographics of the construction workforce.
SE4.4-13 ESRP 4.4.2 10 CFR 51.45 10 CFR 51.70	Provide an estimate of impacts on school capacity / percentage of use and list potential mitigation measures.	
SE4.4-14 ESRP 4.4.3 10 CFR 51.45 10 CFR 51.70	Please provide more discussion of the possible pathways associated with subsistence fishing activities and the impact of emissions from vehicles on minority and low-income workers.	
SE5.8-1 ESRP 5.8.2 10 CFR 51.45 10 CFR 51.70	Provide an assessment of local housing impacts that does not assume the indirect workforce in-migrates into the ROI.	

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (supporting information)
SE5.8-2 ESRP 5.8.2 10 CFR 51.45 10 CFR 51.70	There is a mitigation measure identified for Route 11 and Orange Street that was apparently not discussed in the construction section. Indicate if this mitigation measure should be added to the construction section. If it is a measure specifically designed to address the operations workforce, describe the nature of the issue addressed by this proposed mitigation measure.	
CB10.4-1 ESRP 10.4.2 10 CFR 51.45 10 CFR 51.70	Provide a more detailed estimate of the construction costs and the cost of supplying the power (\$/MW) at the BBNPP. The estimated BBNPP cost must include more detailed cost categories (e.g., power block, turbine buildings, and any element used in electricity generation). These should be overnight costs, not including interest expense. Transmission lines should not be included in the estimated costs for the BBNPP.	

***Terrestrial***

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
TE2.4-1 ESRP 2.2.1; 10 CFR 51.71	Identify the location of all lay-down areas in Figure 2.1-1, BBNPP Site and Proposed New Plant Layout, or provide a new figure to show the location of these features.	

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
TE2.4-2 ESRP 2.2.1; 10 CFR 51.71	Provide Figure 2.2-1 with a clear legend.	Figure 2.2-1, Land Use on the BBNPP Site: The legend is partially obscured, excluding some land use categories.
TE2.4-3 ESRP 2.4.1; 10 CFR 51.71	Provide details of any planned offsite land-clearing activities, such as offsite borrow pits for fill material.	The ER references offsite borrow pits for fill material (as being covered under the NPDES Construction General Permit (CGP) from PADEP) (ER Pg 1-17).
TE2.4-4 ESRP 2.4.1; 10 CFR 51.71	Provide a figure which projects the overlapping boundaries of all identified important habitats within the OCA (i.e., palustrine forested wetlands, palustrine scrub/shrub wetlands, and palustrine emergent wetlands), and the boundaries both in and out of the OCA for the Susquehanna Riverlands Important Bird Area (IBA#50), the Wetlands Natural Area, and the Susquehanna Riverlands Environmental Preserve (SREP) (both east and west of the river), in relation to the proposed intake structure, and the OCA boundary.	<p>A figure was presented at the site audit with the projected overlapping boundaries of the IBA#50, intake structure, SREP, Wetlands Natural Area, and the OCA boundary. Provide the figure.</p> <p>Adding the important habitats identified within the OCA to this figure would adequately address this request. The written discussion presented at the site audit clarifies questions surrounding the interrelationships of PPL properties and the Audubon Society of America. Please submit this written discussion.</p> <p>In general, publically available acreage values for the various entities (e.g., IBA#50, and SREP) do not appear to be in agreement with the values reported in the ER.</p> <p>Clearly illustrate whether these areas, described as important in the ER,</p>

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
		have boundaries that go beyond that of the OCA.
TE2.4-5 ESRP 2.4.1; 10 CFR 51.71	Confirm the occurrence of <i>Solidago rigida</i> , stiff goldenrod, within the OCA boundary.	The Pennsylvania Natural Heritage Program (PNHP) website for state-listed species in Luzerne County was compared with <i>A Field Survey of Plant Communities at the Proposed Bell Bend Nuclear Power Plant Site, Luzerne County, Pennsylvania</i> . A State-endangered plant species, <i>Solidago rigida</i> , stiff goldenrod, listed on the PNHP website, was recognized on the OCA in the Field Survey document but not listed as important in the ER. Please explain.
TE2.4-6 ESRP 2.4.1; 10 CFR 51.71	Provide functional assessment of wetlands when completed.	Provide a relative description of the functions and values.
TE2.4-7 ESRP 2.4.1; 10 CFR 51.71	Provide ecological information describing the area identified for the proposed Susquehanna 500kV Switchyard 2.	In section 1.2.5 of the ER, it is stated that “one new 500 kV transmission system switchyard (Susquehanna 500 kV Yard 2),” would be constructed on the BBNPP site. In Figure 2.1-1, BBNPP Site and Proposed New Plant Layout, the area identified for the Proposed Susquehanna 500kV Switchyard 2 falls outside of the OCA. Clarify this apparent inconsistency (ref ER sections 1.2.5, 2.2.2.2, and 2.4.1.9), describe current land use, and provide the ecological data and community types, etc., needed to describe and evaluate potential impacts to this location.  Figure 2.2-1, Land Use on the BBNPP Site, shows this area as forested.
TE2.4-8 ESRP 2.4.1; 10 CFR 51.71	Provide a copy of the Rapanos wetlands jurisdiction determination forms or equivalent when completed.	Expected Jurisdictional Determination: Fall 2009

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
TE4.3-1 ESRP 4.3.1; 10 CFR 51.71; Migratory Bird Treaty Act	Provide a discussion that evaluates potential impacts to the Susquehanna Riverlands Important Bird Area (IBA#50), the Wetlands Natural Area, and the Susquehanna Riverlands Environmental Preserve (SREP) (both east and west of the river).	This discussion should address potential impacts to nesting habitat, acreage of permanent habitat loss, and acreage of habitat conversions.
TE4.3 -2 ESRP 4.3.1; 10 CFR 51.71	Provide a table of pre-construction acreages for developed and undeveloped terrestrial and wetland habitats and all post-construction acreage conversions.	<p>Provide both pre- and post-construction terrestrial and wetland habitat acreages in terms of upland forest, upland scrub/shrub, old field/former agriculture, agricultural, palustrine forested wetlands, palustrine scrub/shrub wetlands, and palustrine emergent wetlands. Include acreages for water bodies, developed areas, and for the areas defined as the Susquehanna Riverlands Environmental Preserve (SREP) and Wetlands Natural Area. Tabulate acreage conversions in terms of the habitat types and important areas described in the ER and above. For example, it is expected that a number of acres of upland forest would be converted to shrub/scrub habitat as a consequence of transmission corridor construction. Other construction features would result in the permanent conversion of this habitat to industrial, and still other temporary features might result in other conversions. This accounting will facilitate the evaluation of impacts to terrestrial and wetland habitats described within the OCA, SREP and the Wetlands Natural Area and will describe post-construction habitat acreages.</p> <p><u>Current information in the ER:</u> In section 4.3.1, it states that, “an estimate of all land areas, including both developed lands and undeveloped terrestrial habitats, that would be temporarily or permanently disturbed during construction of BBNPP and supporting facilities is provided in Table 4.1-1.”</p>



**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
		<p>Table 4.1-1 describes both permanent and temporary construction features but does not describe, in terms of area, the impacts to previously developed land or undeveloped terrestrial habitats.</p> <p>Table 2.2-1 presents generalized categories of land use acreages (clumped forest and wetland types).</p>
TE4.3-3 ESRP 4.3.1; 10 CFR 51.71	Provide evaluation of potential ecological impacts associated with reconductoring off-site transmission lines.	In section 2.2.2.2 of the ER, it is stated that certain sections of two off-site transmission lines will need to be reconductored to avoid network overloads during peak usage periods.
TE4.3-4 ESRP 4.3.1; 10 CFR 51.71	Provide a discussion of permanent and temporary hydrologic impacts to wetland function for wetland areas that are not being filled.	Review existing and planned hydrological modeling by Rizzo, and discuss impacts from the construction of any ground-water flow barrier (described in ER section 2.3.2.2.11) to wetlands function southwest of the proposed power block location.
TE4.3-5 ESRP 4.3.1; 10 CFR 51.71	Provide a discussion of the acute and chronic noise impacts to wildlife from construction of the proposed BBNPP.	<p>The ER provides a generic discussion of noise levels (typical noise levels associated with construction equipment are in Table 4.4-1). Baseline environmental noise surveys were conducted in April and June of 2008.</p> <p>Provide a discussion relevant to noise impacts on wildlife.</p>
TE4.3-6 ESRP 4.3.1; 10 CFR 51.71;	Provide a discussion relating a detailed construction schedule to specific impact avoidance for important species and habitats.	

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

<b>RAI Number</b>	<b>Question Summary (RAI)</b>	<b>Full Text (Supporting Information)</b>
Endangered Species Act;  Migratory Bird Treaty Act		
TE4.3-7 ESRP 4.3.1; ESRP 9.3; 10 CFR 51.71  10 CFR 51.45(b)(3)	Provide a table of wetland acreages and types of wetland impacts (wetland loss vs. wetland conversion) for the proposed and all alternative sites.	A draft table was presented at the site audit. This table would serve to adequately answer this request with the addition of wetland losses and conversions.
TE4.3-8 ESRP 4.3.1; 10 CFR 51.71	Provide the Section 404 (b)(1) analysis when completed.	
TE4.3-9 ESRP 4.3.1;  Clean Water Act;  40 CFR 230; 10 CFR 51.71	Provide a figure showing the locations proposed for storage of dredge and fill materials.	
TE4.3-10	Provide a consistent representation of temporary and permanent grading on all figures.	Address the areal extents of temporary and permanent disturbances that appear inconsistent within the ER: see Figures 4.3-1 and 4.3-2 and

**Enclosure 1**  
**NRC Requests for Additional Information (RAIs)**  
**Bell Bend Nuclear Power Plant**  
**Combined Operating License Application – Environmental Report**

RAI Number	Question Summary (RAI)	Full Text (Supporting Information)
ESRP 4.3.1; 10 CFR 51.71		compare to Figure 4.1-1 near the proposed intake structure.

***Transportation***

RAI Number	Question Summary (RAI)	Full Text (supporting information)
TR4.7-1 ESRP 4.7 10 CFR 51.71(d)	Provide a conversion of the quantities of construction material for cable and piping to linear feet from the Table in RFI-06-032 that lists these materials in tons	
TR4.7-2 ESRP 4.7 10 CFR 51.71(d)	Discuss the estimated current average distance traveled to work by SSES employees or an estimate, with a supporting line of reasoning, of the average distance to work that might be traveled by BBNPP construction and/or operations personnel	