

Susquehanna River Basin Commission

a water management agency serving the Susquehanna River Watershed



March 1, 2010

Mr. Terry L. Harpster
VP-Bell Bend Project-Development
PPL Bell Bend, LLC
38 Bomboy Lane, Suite 2
Berwick, PA 18603

Re: Notice of Application Review for PPL Bell Bend, LLC;
Bell Bend Nuclear Power Plant, BNP-2009-073;
Salem Township, Luzerne County, Pennsylvania

Dear Mr. Harpster:

The Susquehanna River Basin Commission (Commission) is reviewing the applications and supporting documents submitted by PPL Bell Bend, LLC (PPL BB) and received by the Commission on May 15, 2009 and an application amendment received on October 15, 2009. The recent submittal of the Plot Plan Change Drawings WBS 1.41, received on February 8, 2010, has not been reviewed and may affect some of the comments herein. The applications and amendment include requests to withdraw 3.300 million gallons per day (mgd) of groundwater (30-day average) from a number of wells for dewatering, withdraw up to 44.000 mgd from the Susquehanna River, and a consumptive water use of up to 31.000 mgd. PPL BB intends to construct a nuclear power plant and initiated the pre-application process with the U.S. Nuclear Regulatory Commission (NRC) on October 8, 2008 to allow sufficient lead time for approvals necessary for commercial operation by December 2018.

As you know, it is the purpose of the Commission to effect comprehensive multiple purpose planning for the conservation, utilization, development, management and control of the water and the related natural resources of the Susquehanna River basin in accordance with the best interest of the people of the basin and the Commission's member jurisdictions. The magnitude of the water withdrawal requests for the Bell Bend Nuclear Power Plant (BBNPP) project require that the Commission assure that all constituencies are given due consideration in the application review, particularly downstream users. The Commission is concerned the consumptive use of water by BBNPP, along with the cumulative consumptive use by others, has the potential to adversely impact the Susquehanna River, not only in the reach of the river where BBNPP is located, but it will also negatively impact the river further downstream. Before any project is approved for water withdrawal and consumptive use of significant magnitude, the project sponsor must demonstrate to the Commission that it has made a good faith effort to develop adequate measures to mitigate the consumptive water use.

The PPL BB applications are being reviewed in accordance with the above issues, and also in accordance with all other applicable provisions of the Compact, considerations in Commission Policy No. 2003-01, and the general standards set forth in Commission regulations, including Regulations 18 CFR §801 (General Policies) and §806 (Review and Approval of Projects). The purpose of this letter is to inform you that based on our review to date the application and amendment do not completely satisfy the informational needs of the Commission. Please refer to the comments below for a description of the application deficiencies.

CONSUMPTIVE WATER USE APPLICATION

Project Sponsors whose consumptive use of water is subject to review and approval shall mitigate such consumptive use [18 CFR §806.22(b)].

The Commission will evaluate the requested quantity of consumptive water use as to the reasonable foreseeable need and proposed conservation measures to minimize water use. The PPL BB application proposes to use payment for mitigation of the consumptive water use; however, due to the magnitude of the BBNPP consumptive use, payment may not be a viable option. The Consumptive Use Mitigation Plan, SRBC Publication No. 253, indicates that consumptive water use in the Middle Susquehanna Subbasin currently exceeds 10 percent of the Q7-10 flow. Therefore, the withdrawal requested by PPL BB will likely require a protective passby flow to protect fish and wildlife and their habitat, as well as downstream uses. The Commission strongly urges PPL BB to research alternate water supply options to mitigate consumptive use during low flow conditions [18 CFR §806.22(b)(1)]. Commission staff will review this request to use payment for mitigation and formulate its recommendations, however please be advised that the Commission will in its sole discretion determine the acceptable manner of mitigation to be provided by a project sponsor under Commission Regulation 18 CFR §806.22(c).

Applicant must include in their application plans for avoiding or mitigating for consumptive use [18 CFR §806.14(a)(2)(ix)].

The information submitted in the application and amendment fails to adequately analyze avoidance of consumptive use. The amendment included an analysis of six different cooling modes, however, consumptive water use was not factored into the cost analysis of the six alternative methods of heat dissipation for BBNPP. The only factors considered were impact on power production, initial cost, and maintenance costs. Because the cost of consumptive water use was not included in the analysis, the alternatives that maximize consumptive use appear to be less costly compared to other alternatives that minimize consumptive use, such as dry cooling systems and hybrid cooling towers. The cost of providing supplemental water to mitigate consumptive use could be significant if reservoirs, pipelines, or other measures are required. All costs need to be considered for a valid analysis. Also, the analysis assumed that the environmental impact of all the alternatives were similar. This assumption is not valid when dry cooling systems and hybrid cooling towers are included in the environmental analysis. The chosen alternative, natural draft cooling towers, require significant blowdown to maintain proper

water chemistry. Blowdown flows returning to the river will be heated and chemicals, including a biocide, will be added, and this may have a negative environmental impact on the river. Dry cooling systems and hybrid cooling towers require significantly less blowdown and may have less environmental impact. The environmental impact of blowdown of all alternatives needs to be analyzed.

The information submitted in the application and amendment fails to include an analysis of the increased evaporation caused by the thermal effects of the blowdown discharge from BBNPP. The thermal effects from the BBNPP blowdown discharge are additive to the thermal effects of the Susquehanna Steam Electric Station (SSES). This analysis should be consistent with the SSES Permanent Water Monitoring Plan, submitted to the Commission by PPL Susquehanna, LLC on January 9, 2008.

The information submitted in the application and amendment fails to describe plans to mitigate consumptive use. As noted above, payment for mitigation of consumptive water use may not be a viable option for the amount of consumptive use proposed by the BBNPP. Not only is the magnitude of the consumptive use a concern, but the timing of the peak usage is coincident with the typical low flow periods of the year. PPL BB should describe plans during low river flows to release water for flow augmentation equal to the projects total consumptive use, or reduce withdrawal from the river equal to the projects total consumptive use in accordance with 18 CFR §806.22(b)(1)(i) and (ii).

SURFACE WATER WITHDRAWAL APPLICATION

The Commission may deny an application, limit or condition an approval to ensure that the withdrawal will not cause significant adverse impacts to the water resources of the basin [18 CFR §806.23(b)(2)].

The Commission has reviewed the submitted surface water withdrawal application and will continue its review based on the PPL BB response to the comments below. The Commission may deny an application, limit or condition an approval to ensure that the withdrawal will not cause significant adverse impacts to the water resources of the basin. To that end, the Commission may consider lowering of stream flow levels; rendering competing supplies unreliable; affecting other water uses; causing water quality degradation that may be injurious to any existing or potential water use; affecting fish, wildlife, or other living resources or their habitat; or affecting low flow of perennial or intermittent streams. The Commission may also limit a withdrawal to the amount (quantity and rate) of the water needed to meet the reasonable foreseeable needs of the project sponsor [18 CFR §806.23(b)(1)].

The Commission utilizes passby flows, conservation releases, and consumptive use compensation to help protect aquatic resources, competing users, and instream flow uses downstream from the point of withdrawal. . . . When the natural flow is equal to, or less than, the prescribed passby flow, no water may be withdrawn from the water source, and the entire natural flow shall be allowed to pass the point of withdrawal (Policy No. 2003-01).

As discussed at the meeting with PPL BB on July 8, 2009, Commission staff has determined that the river withdrawal may exceed the threshold for the Passby Flow Guidance as defined in Commission Policy No. 2003-01. Subsequent to that meeting, the Commission received a proposed Instream Flow Study, submitted on behalf of PPL BB by Normandeau Associates, Inc. on August 7, 2009. After discussion with the Commission staff, a revised Instream Flow Study Plan was submitted to the Commission on November 19, 2009, on behalf of PPL BB by Normandeau Associates, Inc. and ERM. In the area of the proposed withdrawal, the river is classified as a Warm Water Fishery (WWF) under Title 25, Chapter 93, Pennsylvania Code, and would likely require a 20 percent average daily flow passby condition which would create an interruptible water supply. Commission staff will respond with comments to that proposal in separate correspondence.

Applicant must include in their application plans to implement and properly maintain special monitoring measures [18 CFR §806.23(b)(3)(iii)].

The information submitted in the application and amendment fails to describe plans to establish a permanent water monitoring plan. The plan should be similar in scope and detail to the SSES Permanent Water Monitoring Plan, submitted to the Commission by PPL Susquehanna, LLC on January 9, 2008. The Commission requires that a withdrawal be metered at the intake to within plus or minus 5 percent accuracy of the actual flow (18 CFR §806.30).

Applicant must include in their application a proposed quantity of water to be withdrawn [18 CFR §806.14(a)(2)(iii)]; applicant must include in their application supporting studies, reports, and other information upon which assumptions and assertions have been based [18 CFR §806.14(a)(2)(viii)].

The information submitted in the application and amendment addressed the calculation of the proposed quantity of surface water and groundwater to be withdrawn. The amendment included a determination of the proposed surface water quantity needed; however, the analyses did not include the calculation of the water values used to compute the proposed surface water withdrawal. Any water values taken from manufacturer information sheets should be referenced and included in the application.

The consumptive use application, Form 24C, indicates that trucked-in water would be used for construction if necessary. Page 4-14 of the submission for 18 CFR §806.14(a)(3)(i) also mentions, "The potential sources of water for construction include local municipal water, Susquehanna River water, and offsite water trucked to the construction site." A water source for the water being trucked to the site has not been listed. PPL BB should submit the source of the water trucked to the site. PPL BB cannot use Susquehanna River water for construction purposes prior to receiving a surface water approval from the Commission.

The "Waste Water Retention Basin Discharge" in the water balance diagram "Anticipated Water Use Diagram Peak Day" (Attachment SW-3-A) does not account for rainfall or the evaporation of the 34.3 gallons per minute (gpm) for the "ESWEMS Retention Pond."

The diagram also does not account for the rainfall or 14.1 gpm evaporation for the "Waste Water Retention Basin."

The applicant should assemble a single document outlining all proposed water sources, the quantities of water to be withdrawn, and the determination of those quantities as computed. Any references should be included as part of the single document.

Applicants shall provide copies of any correspondence with member jurisdiction agencies [18 CFR §806.14(a)(1)(x)].

The information submitted with the application and amendment provided copies of correspondence with member jurisdiction agencies, however, given the magnitude of the proposed project and the volume of comments generated during the project review process, the Commission requires that additional, on-going correspondence be provided by PPL BB. Of particular concern for the Commission are correspondence with the NRC pertaining to project schedule, water resources, and environmental impact; and correspondence with the U.S. Army Corp of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), Pennsylvania Fish and Boat Commission (PFBC), Pennsylvania Department of Environmental Protection (PADEP), Pennsylvania Department of Conservation and Natural Resources, and other appropriate agencies.

Applicant must include in their application a proposed quantity of water to be consumed [18 CFR §806.14(a)(2)(iv)].

The information submitted in the application and amendment fails to adequately address the calculation of the proposed quantity of water to be consumed. While the application and amendment addresses quantities of consumptive use of evaporation and drift from the CWS and ESWEMS cooling towers, evaporation from the ESWEMS retention pond, evaporation from the wastewater retention basin, and power plant consumptive use; it does not address the evaporation from the Susquehanna River due to thermal discharge [refer to comments provided in 18 CFR §806.14(a)(2)(ix)].

The submission for stormwater management [Report No SL-009449 Revision 2, August 14, 2008; response to 18 CFR §806.14(a)(2)(ix)] mentions the area of stormwater ponds at water surface could be 5.8 acres for Pond-1 and 6.2 acres for Pond-2. Water levels at "low water levels" would be 3.8 acres for Pond-1 and 4.86 acres for Pond-2. The evaporation from these ponds could potentially exceed the Commission's regulatory threshold for consumptive use; therefore, PPL BB should submit calculations and, if necessary, computer modeling to determine evaporation rates of these ponds during various climatic conditions.

The "Waste Water Retention Basin Discharge" in the water balance diagram "Anticipated Water Use Diagram Peak Day" (Attachment CU-4) does not account for the rainfall or the evaporation of the 34.3 gpm for the "ESWEMS Retention Pond" or the rainfall or the evaporation of the 14.1 gpm for the "Waste Water Retention Basin." The diagram also does not account for evaporation from the Susquehanna River due to thermal discharge.

The applicant should assemble a single document outlining all consumptive use sources, the quantities of water to be consumed, and the determination of those quantities as computed. Any references should be included as part of the single document.

Applicant must provide a description of the project in terms of water use and availability [18 CFR §806.14(a)(2)(vi)].

The information submitted in the application and amendment fails to adequately describe water use and availability. PPL BB should describe in detail the water usage expected based on seasonal variability and at different operational modes, including full power, reduced power, and periodic maintenance outages. Water use should be compared to seasonal flow variations of the river to determine peak water usage during historical low flow conditions.

Applicant must provide a description of the project in terms of all water sources and the initiation of each source [18 CFR §806.14(a)(2)(vii)].

The information submitted in the application and amendment fails to adequately describe water sources and dates when the water is needed for the project. PPL BB should provide a schedule that depicts when water from the river is required for startup and operation of BBNPP. PPL BB should also submit a proposed plan and schedule for other sources of water that may be required to mitigate consumptive use. The proposed plan and schedule should allow for several different options for consumptive use mitigation and should specify when the preferred option must be identified to fit the overall project schedule.

Applicant must include in their application the anticipated impact of the proposed project on surface water characteristics (quality, quantity, flow regimen, other hydrologic characteristics) [18 CFR §806.14(a)(3)(i)].

The information submitted in the application and amendment fails to address the anticipated impacts of the proposed project on surface water characteristics. The information submitted assumes the PPL BB intake to be between the SSES intake and discharge points and the PPL BB discharge to be downstream of the SSES discharge. No other intake or discharge configuration has been identified or modeled. Page 16 of the submission as a response to 18 CFR §806.14(a)(3)(i) (Susquehanna River Thermal Plume and Dilution Modeling) states, "For the near-field, only the BBNPP was modeled. This approach is satisfactory because in the near-field, the plumes do not overlap due to the 380 foot separation of the SSES and BBNPP discharges." Because the report states the SSES thermal plume would not overlap the BBNPP thermal plume, a configuration should be modeled where the PPL BB discharge is located between the SSES intake and discharge, and the PPL BB intake is located downstream of the SSES discharge.

The thermal modeling submission fails to account for modeling of flows consistent with other plans and submissions, such as the Instream Flow Study Plan (IFIM). The IFIM study references modeling flow at 820 cubic feet per second (cfs) (Q7-10) and at 777 cfs (Q7-10 minus

31,000 mgd consumptive use). Commission Policy No. 2003-01 does not allow for water to be withdrawn when river flows are less than the Q7-10 flow; therefore, the thermal modeling should be run at 820 cfs and at 868 cfs (Q7-10 plus 31,000 mgd consumptive use).

Thermal loading should be modeled at various ambient water temperatures such as minimum, maximum, and average temperatures across all seasons to account for temperature fluctuation and its potential effect on aquatic communities.

The modeling performed fails to account for the evaporation of water due to the thermal loading in the Susquehanna River [refer to comments for 18 CFR §806.14(a)(2)(ix)].

The submission also fails to address the method, if any, of wastewater retention pond cooling such as through a heat exchanger before being discharged through the diffuser into the Susquehanna River. Page 7 of "Report No. SL-009498, Revision 3" indicates a heat exchanger will be utilized, while page 14 of the Susquehanna River Thermal Plume and Dilution Modeling indicates the modeling did not represent an auxiliary heat exchanger. PPL BB should submit designs related to the retention pond, including but not limited to heat exchanger and diffuser criteria. PPL BB also should submit seasonal temperatures of inflow and outflow of retention pond and seasonal temperatures of discharge into the Susquehanna River. If a heat exchanger is to be utilized, PPL BB should model the thermal discharge accordingly.

The information submitted in the application and amendments addressed the concept of the surface water intake design; however, PPL BB did not provide any specific information or plans regarding the design of the intakes or the open channel where the proposed intakes will be located. Information provided by PPL BB, "Report No. SL-009498 Revision 3; November 20, 2008," indicates the location of the pumps and intakes is imperative to the efficiency of the pumps. The location and velocity distribution through the open channel has the potential to create uneven velocity distribution which could ultimately result in the creation of eddy currents or deep-cored vortices. PPL BB should submit dimensions of intakes, dimensions of the intake channel, locations of pumps or intakes within the open intake channel, open areas of the various screening, calculations of velocity through screened areas, schematics or diagrams of the intake design and intake channel, and all methods and designs used to avoid impingement and entrainment of debris and aquatic organisms within the intake channel.

PPL BB should determine a method of sampling the number of aquatic organisms impinged or entrained as a result of the proposed surface water withdrawal. The method should account for impingement and entrainment of organisms throughout the life of the project. Appropriate impingement and entrainment intake system designs should be made to ensure impacts to the local aquatic community are avoided.

Applicant must determine the anticipated impact of the proposed project on existing water withdrawals [18 CFR §806.14(a)(3)(iii)].

The information submitted in the application and amendment did address the effect the proposed project will have on the surrounding area; however, PPL BB did not address whether

discharge of heated water would negatively affect downstream users. PPL BB should submit a determination as to whether the thermal loading of the discharge will affect any existing water users located downstream of the discharge.

The information submitted in the application and amendment fails to address the effect the proposed project will have on the water quality of the Susquehanna River downstream of the project and its potential effect on existing water withdrawals and aquatic communities. PPL BB should determine the effect the proposed consumptive use would have on the dilution of Nescopeck Creek drainage (mine impaired water) as well as any downstream municipal wastewater treatment plant discharges, including, but not limited to, Berwick, Nescopeck, and Briar Creek. PPL BB should determine the effect the thermal loading will have on dissolved oxygen (DO) concentrations downstream of the discharge. PPL BB should evaluate the change and effect of DO concentrations on downstream users and aquatic communities.

Applicant must provide an estimated completion date for the proposed project and an estimated construction schedule [18 CFR §806.14(a)(4)].

The information submitted in the application and amendment provides a detailed project schedule addressing all aspects of the project, including construction activities. Activity SR0330 indicates that SRBC approvals are to be complete by April 11, 2011. The project review required by Commission policies and regulations may not support an April 11, 2011 approval by the Commission. Factors such as the magnitude and timing of the amended application submittal, the complexity of completing an IFIM study to determine passby flows, the time required to design and perform aquifer tests and resubmit the groundwater withdrawal application, and developing consumptive use mitigation options all could extend the Commission's review and approval beyond the April 11, 2011 date. As these activities become better defined, a more appropriate schedule should be developed for Commission activities.

Applicant must determine the compatibility of the proposed project with existing and anticipated uses [18 CFR §806.14(b)(1)(iv)].

The information submitted in the application and amendment fails to adequately describe compatibility of the proposed project to existing and anticipated users of water resources in the mid-Susquehanna River basin. The Commission can provide a list of existing users in this section of the river. PPL BB should consult state water plans and county and municipal comprehensive plans, as well as the Commission Comprehensive Plan, for proposed water users. PPL BB also should evaluate other uses of the river including instream uses and recreation.

Applicant must determine the anticipated impact of the proposed project on flood damage potential considering the location of the project with respect to the flood plain and flood hazard zones [18 CFR §806.14(b)(1)(v)(A)].

The information submitted in the application and amendment fails to address the impact of the project on flood plains and flood hazard zones. The information, as submitted, addresses the potential of the project to be flooded. Although the Commission agrees that inundation of

the project is an important factor, the intent of the regulation is to address the impact of the project on the flood plain and flood hazard zones due to project related buildings or other obstructions causing the flood plain or flood hazard zones to be altered. PPL BB should provide analysis to determine the impact of the proposed project on designated flood plains and flood hazard zones in the vicinity of the project.

Applicant must determine the anticipated impact of the proposed project on recreation potential [18 CFR §806.14(b)(1)(v)(B)].

The information submitted in the application and amendment did address recreational opportunities in the area; however, PPL BB did not commit to providing any additional recreational resources associated with the BBNPP. PPL BB should study the potential of providing the public with recreational opportunities in the vicinity of the project and include development of viable recreational options as part of the project plan.

Applicant must provide a description of the project in terms of anticipated impact of the proposed project on fish, wildlife, and their habitat quality, kind, and number of species. Applicant must demonstrate plans for avoiding any anticipated impacts [18 CFR §806.14(b)(v)(C)].

The information regarding rare species present in the construction zone, as indicated in the document titled "Threatened or Endangered Species and Their Habitats" does not include reference to the presence of trout and therefore is missing potential impacts to these sensitive species. Further detail regarding on-site roosting and maternal den sites for Indiana bat in the upland forest areas needs to be included in the impact assessment.

The information submitted in the document referring to 18 CFR §806.14(b)(1)(v)(C), titled "Fish and wildlife (habitat quality, kind and number of species)" offered a thorough overview of wildlife species that occur in the area of BBNPP and gave a comprehensive listing of rare species impact risk from site disturbance. However, a more thorough document should be submitted that addresses the anticipated impact of specific proposed activities on those species and habitats (including upland habitats) that are identified in the area and have been confirmed on-site through field surveys.

The "Wild Trout Assessment" document is a good overview of the on-site waterbodies and fish communities.

The "Field Survey of Fish and Macroinvertebrates" document is a thorough overview of pond sampling for fish and stream sampling for macroinvertebrates. However, the timing of macroinvertebrate sampling was not consistent between sites. Therefore, any conclusions drawn about the aquatic community between sites must be limited to sampling that occurred at the same time (e.g., July 2008).

The "Preliminary Mussel Survey in the Susquehanna River in the Vicinity of the Proposed Bell Bend Nuclear Power Plant Site" document offers a thorough assessment of

mussels present in the river and near the proposed site. However, proposed or anticipated impacts of the project on aquatic mussel communities are not included in the document. Additional detail regarding impacts must be provided, especially as related to the green floater species found at the site.

The amendment included a copy of correspondence with the USACE regarding the Jurisdictional Determination of on-site wetlands. Commission staff's review of the correspondence and attached "Bell Bend Wetlands Delineation Report" indicate that there are no Exceptional Value wetlands on-site. Walker Run has been identified as a naturally-reproducing, wild trout waterbody. As such, the Commission views all associated and interconnected wetlands with Walker Run as Exceptional Value in terms of resource protection [see PA Code §105.17(1)(iii)]. Additionally, the USFWS indicated, in writing, the site serves as suitable foraging and roosting habitat for the federally endangered Indiana bat. An Indiana bat survey of the site found no occurrences of the species on-site; however, the survey determined that forested areas throughout much of the site provide potential roosting and maternity den sites for Indiana bats in the form of large trees with shaggy, platy or exfoliating bark, crevices and/or cavities (AREVA, 2008c). The wetland report does not identify if the suitable habitat is upland or located within the on-site forested wetlands. Should the suitable habitat exist within the on-site forested wetlands, the Commission would consider those wetlands as Exceptional Value as well [see PA Code §105.17(1)(i)]. The Commission requires an amendment to the Wetlands Delineation Report be submitted that accounts for the Exceptional Value wetlands on-site.

A document was submitted in reference to 18 CFR §806.14(a)(3)(i), titled "Surface Water Characteristics (quality, quantity, flow regimen, other hydrological characteristics)." Section 4.2.1.5 of the document, titled "Construction Impacts," discusses the filling of on-site wetlands and the diversion of Walker Run for the construction of the power block area. This section identifies the possibility of increased sediment loads and channel erosion in downstream reaches of Walker Run. The filling of wetlands, diversion of Walker Run, a trout production stream, and the increased potential for sediment loads and channel scour need to be addressed in terms of anticipated project impacts to fish and wildlife habitat. Additionally, Section 4.3.1.6 is identified as containing information related to proposed wetland mitigation measures; however, Section 4.3.1.6 referenced in the document has not been provided to the Commission as part of the application. The wetlands adjacent to Walker Run have been designated as "exceptional value" by PFBC and PPL BB should take appropriate measures to preserve or mitigate degradation of the wetlands.

A document was submitted titled "Impingement and Entrainment Sampling for the Proposed Bell Bend Nuclear Power Plant at the SSES Circulating Water Supply System Intake Structure." The document fails to account for fall migration of juvenile shad in the study methodology. The applicant would need to demonstrate why it was omitted from the study. Estimations of entrainment of each taxon (Table 7) need explanation. How does the total estimated entrainment of 13+ million fish correlate to the study period and results? How does the estimated entrainment of 13+ million fish correspond to the requirement in 18 CFR §806.14(b)(v)(C)?

A document was submitted titled "A Field Survey of Plant Communities at the Proposed Bell Bend Nuclear Power Plant Site." While the survey was appropriate for baseline plant communities on site, the methodology failed to address the requirements of 18 CFR §806.14(b)(v)(C) regarding potential/anticipated impacts to habitats.

Overall, PPL BB should assemble a single document outlining on-site and adjacent species and habitats and the potential for specific project activities to impact those species and habitats (and mitigation measures for potential impacts). This would replace the assemblage of disparate documents contained in the application at present.

PPL BB should provide the Commission with Geographic Information Systems data layers for all site disturbance and construction footprints.

Applicant must determine the anticipated impact of the proposed project on site development [18 CFR §806.14(b)(1)(v)(E)].

The information submitted in the application and amendment fails to address the impact of the project on the project site and surrounding areas. The Commission requires appropriate studies that determine the impact of the project on geology, topography, soil characteristics, and adjoining and nearby land uses.

Applicant must determine the anticipated impact of the proposed project on historical, cultural and archaeological resources [18 CFR §806.14(b)(1)(v)(F)].

The information submitted in the application and amendment outlined a comprehensive process to determine impacts of the proposed project on historical, cultural, and archaeological resources in the vicinity of the project; however, the analysis of the reports generated is incomplete. In Section 5.1.3 of Part 3 of the Environmental Report, the State Historical Project Office (SHPO) **has not completed their review** of Phase 1b. Also in Section 5.1.3 it states, "the SHPO **will be** consulted to identify measures to avoid, minimize, or mitigate any adverse effects." And finally, in Section 5.1.3 it states, "Based on the results of the cultural resources investigations conducted to date it is likely that there **will be adverse impacts** to cultural resources from construction." PPL BB should complete the analysis of the impact of the proposed project on historical, cultural, and archaeological resources and submit an application amendment specifying the anticipated impacts and what measures are proposed to avoid, minimize or mitigate any adverse effects.

The Commission uses the Comprehensive Plan for the Water Resources of the Susquehanna River Basin (Comprehensive Plan) as a guiding document for all aspects of Commission activities, including project review. Part I.D.7. and Part V.J. of the Comprehensive Plan address the Commission's goal of restoring migratory fish to the Susquehanna watershed.

The information submitted in the application and amendment fails to address the impact of the project on migratory fisheries. The referenced sections of the Comprehensive Plan outline goals to restore migratory fish to the Susquehanna watersheds, specifically American shad.

Although migrating adult American shad do not presently have access to the mid-Susquehanna basin due to downstream obstructions, it is the goal of the Commission and other cooperating agencies to eliminate obstructions over time to allow American shad and other migratory species full access to the waterways of the basin. Currently, part of the American shad restoration process entails stocking shad fry upstream from the proposed project site; requiring juvenile shad to pass by the site during out-migration. PPL BB should perform an impingement and entrainment study to determine the impact of the project on out-migrating juvenile shad. Further studies may be required in the future to determine the impact of the BBNPP and SSES on migrating adult shad.

The Commission shall require that the proposed siting and location in the basin of any type of electric generating facility or any facility located outside the basin having an effect on the waters of the basin, shall be planned in direct consultation with the Commission to enable advance consideration of the possible effects of such installation on the water resources of the basin [801.12(c)(2)]. Additionally, the applicant is required to identify and describe reasonable alternatives, the extent of their economic and technical investigation, and an assessment of their potential environmental impact [18 CFR §806.14(b)(iii)].

The information submitted in the application and amendment fails to address the impact on the environment and water resources in the basin from siting BBNPP at the proposed location. The BBNPP Alternate Site Evaluation, Revision 0, uses screening criteria to establish a list of potential project locations to be evaluated. The most viable locations are then reviewed more extensively. The evaluation process analyzes each site based on 16 criteria and each criterion is weighted based on the perceived importance of that criteria. Each of the 16 criteria is evaluated for each site which results in a score of relative acceptability for each site. The BBNPP Alternate Site Evaluation, submitted in the amended application, does not attribute sufficient worth to water availability. Water availability, which is a subset of the hydrology criteria, is weighted less than 3 percent of the total evaluation. Given the importance of water for operation of nuclear power plants, PPL BB should have provided sufficient weight to water availability to reflect the importance of water resources in the basin.

The evaluation process for the hydrology criteria should consider all relevant factors to assure the siting alternatives are properly evaluated. The hydrology criteria, scored by an expert panel, did not factor cumulative consumptive use into the evaluation process. The cumulative consumptive use at BBNPP site from existing upstream users already exceeds 10 percent of Q7-10. This is a critical omission because additional withdrawals by BBNPP at low river flows would potentially cause ecological damage to aquatic life and other users of the river. The Environmental Scoring Criteria Basis (page A-3) averages water withdrawals over an entire year. Using an annual basis, however, ignores seasonal differences in water availability and water usage that may contribute to significant adverse impact on instream uses. In consideration of these potential seasonal impacts, PPL BB should refocus its analysis on peak water usage during low river flow conditions, not annual averages. The evaluation uses a Q7-10 calculated over the last 10 years (1999 – 2009). However, the correct Q7-10 should use the lowest 7-day average flow with a 10 percent chance of reoccurrence, based on the entire period of record of the referenced gage.

The wetlands criteria appear to be appropriately weighted; however, the evaluation of the wetlands criteria did not acknowledge recent actions by the PFBC to designate the wetlands adjacent to Walker Run as "exceptional value." This designation reduces the BBNPP "wetlands" score from 29.33 to 18.67, and the overall BBNPP score from 370.1 to 359.4. PPL BB should revisit the BBNPP Alternate Site Evaluation and make appropriate revisions.

The Commission requires that the project sponsor demonstrate the ability to fund the project and demonstrate commitment of the government to provide services or financing [18 CFR §806.14(b)(1)(ii) and §806.14(b)(2)(ii)].

The information provided in the application and amendment does not provide sufficient financial information to demonstrate that PPL BB has sufficient funding capability to fund the BBNPP project, including decommissioning costs. The Commission recognizes that the financial information may be confidential; however, PPL BB should take the necessary steps to provide the financial information through procedures established by the Commission for submittal and review of confidential documents. PPL BB should provide details of Department of Energy Loan Guarantees (DOE) related to the Energy Policy Act of 2005 for BBNPP, outlining the loan process and the status of securing the necessary loan. The Commission regards securing the DOE loan as an essential element for funding the BBNPP project.

The Commission requires project sponsors to notify each municipality in which the project is located, the county planning agency of each county in which the project is located, and each contiguous property owner that an application has been submitted to the Commission. The project sponsor shall also publish a notification in a newspaper of general circulation serving the area in which the project is located. All notices shall contain a description of the project, its purpose, requested water withdrawal and consumptive use amounts, location and address, electronic mail address, and phone number of the Commission [18 CFR §806.15].

The information submitted in the application and amendment fails to demonstrate that proper notification of the application was provided as required. The notifications that were performed did not contain the required electronic mail address (e-mail) of the Commission as part of the notification. A significant portion of the interface between the public and the Commission is done through e-mail; therefore, the Commission requires that this omission be corrected by renotifying the appropriate parties. This will include renotification to municipality, county planning agency of each county, newspapers, and contiguous property owners.

Although PPL BB submitted a list of contiguous landowners that were notified, the Commission also requires a map showing the property boundaries with the contiguous property owners. The property parcels depicted on the map should be keyed to the list of property owners.

GROUNDWATER WITHDRAWAL APPLICATION

The Commission has reviewed the materials that PPL BB submitted on May 13, 2009, and October 15, 2009, in support of their application for groundwater withdrawals. The Commission considers the groundwater withdrawal application to be premature and conceptual in nature as it does not comply with standards or procedures set forth in Commission Regulation 18 CFR §806 Subpart B – Application Procedures.

According to Commission Regulation 18 CFR §806.12, prior to the submission of an application pursuant to 18 CFR §806.13, a project sponsor seeking approval to withdraw groundwater shall perform a Commission-approved constant-rate aquifer test.

A constant-rate aquifer testing plan must be submitted to the Commission for each proposed withdrawal well, and reviewed and approved by Commission staff prior to the performance of any testing in support of a groundwater withdrawal application.

The required components of a thorough and approvable constant-rate testing plan are described in the Commission's Aquifer Testing Guidance (Policy No. 2007-01). The Application for Aquifer Test Plan Approval, which is an attachment to the Aquifer Testing Guidance, should be completed and submitted with the constant-rate aquifer testing plan. Please be advised that the Commission will approve an aquifer testing plan only for a completed and fully developed well. The well must be constructed to the final total depth and borehole diameter, with permanent casing set and grouted in place.

An aquifer testing plan submittal is considered to be complete when all items in the Application for Aquifer Test Plan Approval have been completed, including submission of the appropriate aquifer testing plan evaluation fee. The Commission requires that a separate aquifer testing plan evaluation fee be submitted for each proposed groundwater withdrawal well. The Commission staff will review an aquifer testing plan only when it is administratively complete.

The Commission has determined that the most effective way to proceed is to return the groundwater withdrawal application and to credit the associated fee towards the consumptive use and surface water withdrawal application process. PPL BB should request a preliminary consultation with Commission staff for an informal discussion of the Commission requirements for the submission of an approvable constant-rate aquifer testing plan.

Any project withdrawing a consecutive 30-day average of 100,000 gpd or more from a groundwater or surface water source, or a combination of such sources shall require an application to the Commission [18 CFR §806.4(a)(2)(i)]. Project sponsors of projects subject to the review and approval of the Commission shall submit an application and applicable fee to the Commission, in accordance with 18 CFR §806, Subpart B-Application Procedure.

As noted above, the information submitted in the application and amendment fails to address specific requirements of the application process for groundwater withdrawals over 100,000 gallons per day (gpd). The request for groundwater withdrawal should be dependant

upon the results of the Commission-approved constant-rate aquifer tests. The application(s) should include the results of the aquifer testing in a required hydrogeologic report, through a series of graphs and maps, accompanied by supporting and interpretive text. The hydrogeologic report should address any anticipated impact of the proposed withdrawal on, but not limited to, the aquifer, competing water users, and the environment, and provide support upon which assumptions and assertions have been based. Please be advised that the successful completion of an approved aquifer test does not guarantee an approval of the requested withdrawal. The Commission requires that a separate application and fee be submitted for each proposed groundwater withdrawal well.

The Commission recognizes that the purpose of the proposed groundwater withdrawals is to depress the groundwater level to facilitate the excavation and construction of the BBNPP; as such, the groundwater withdrawals are integral to an overall site construction plan. According to the information submitted in the groundwater withdrawal application, PPL BB intends to install a groundwater flow barrier in the form of a vertical soil-bentonite slurry wall to isolate the groundwater depression within the footprint of the proposed construction site. Information submitted to the Commission in the amended application indicates that even with the installation of a slurry wall to mitigate impacts adjacent to the construction site, groundwater drawdown will result from the dewatering process.

Since Walker Run has a reproducing trout population and the PFBC has determined that the wetlands adjacent to Walker Run are "exceptional value," the Commission is sensitive to any groundwater pumping-induced impacts in that area. During the aquifer test planning the selection of groundwater and surface water monitoring points should be based principally on the anticipated pumping-induced area of influence. However, it may be necessary to monitor groundwater and surface water outside the anticipated area of influence due to impact sensitivity.

Although proposed monitoring wells are depicted on GW-2, the Commission staff recommends that PPL BB design its long-term monitoring program in conjunction with the planning and results of the required aquifer testing. The Commission will require detailed information regarding plans for discharge from the dewatering during the aquifer testing and long-term operation. In addition to the dewatering discharge location, the Commission will require details including the anticipated quantity and quality of the discharge water, and specific plans to control the discharge so that water quality of the receiving body of water is not impacted. The Commission may also require additional long-term efforts to monitor or mitigate potential impact of the dewatering process on sensitive ecological areas. However, those conditions will be dependent on the requested withdrawal and the results of the Commission-approved aquifer testing.

CONCLUDING COMMENTS

The above comments were generated during the review performed by the Commission to date. It is the intent of the Commission to provide timely feedback to PPL BB to facilitate approval of the applications. Due to the volume and technical nature of the application and amendment submitted for the proposed project, further review will be required by the

Commission as PPL BB responds to the above comments or submits additional information. The technical review by the Commission would be facilitated if PPL BB includes a narrative as part of the submission outlining the express purpose of the submission, which comment or Commission policy or regulation is being addressed by that particular submission, and, in the case of lengthy reports, which sections of the report are applicable to the technical review by the Commission.

The Commission will respond separately at a later date to other requests raised in the PPL BB applications, including an extension of the terms of approval and an extended time to commence water use at the facility. If you have any questions regarding the above, please contact Paula Ballaron at (717) 238-0423, extension 222.

Sincerely yours,



Michael G. Brownell, Chief
Water Resources Management

cc: Stacey Imboden, NRC
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