



SUSQUEHANNA RIVER BASIN COMMISSION

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Docket No. 20070908

Approval Date: September 12, 2007

PPL BRUNNER ISLAND, LLC– BRUNNER ISLAND STEAM ELECTRIC STATION

Surface Water Withdrawal of up to 835.000 mgd from the Susquehanna River,
and Consumptive Water Use of up to 23.100 mgd (Peak Day),
for Power Plant Operation,
East Manchester Township, York County, Pennsylvania

Review Authority

This project is subject to review pursuant to Article 3, Section 3.10, of the Susquehanna River Basin Compact (Compact), P.L. 91-575, 84 Stat. 1509 et seq., and Susquehanna River Basin Commission (Commission) Regulation §806.4, relating to projects requiring review and approval. The Commission received the application for consumptive water use on September 18, 2006, and the application for existing surface withdrawal on July 16, 2007.

Description

Purpose. The purpose of the application is to request approval for consumptive water use and surface water withdrawal for processes related to operations at the Brunner Island Steam Electric Station (Brunner Island SES).

Location. The project is located in the Lower Susquehanna Subbasin, HUC 02050306, East Manchester Township, York County, Pennsylvania.

Project Features. PPL Brunner Island, LLC (PPL Brunner Island), the project sponsor, has requested approval for consumptive water use of up to 23.100 million gallons per day (mgd) on a peak day, of which up to 15.000 mgd will be new consumptive use related to the planned installation of cooling towers and flue gas desulfurization systems (FGD systems or scrubbers). The project sponsor also has requested approval for a water withdrawal of up to 835.000 mgd (peak day) from the Susquehanna River. The present rate of withdrawal is not expected to increase as a result of the planned installations.

The project consists of three base-load, coal-fired, steam electric generating units, known as Units 1, 2, and 3. Units 1, 2, and 3 began operation in 1961, 1965, and 1969, respectively, and each unit has an open-cycle (once-through) cooling system with its own intake on the Susquehanna River. The total maximum water withdrawal from the river is approximately

835.000 mgd, limited by the capacity of the existing cooling water supply pumps. Essentially all of this water is used for cooling spent steam in the condensers of the three units' cooling systems, and the cooling water is returned to the river downstream from the plant via a common, 2,200-foot discharge channel. The project sponsor describes the discharge water as essentially undiminished in quantity and quality, except for the elevated temperature. A small portion of the water withdrawn from the river is used for miscellaneous plant purposes, such as sluicing.

Currently, consumptive water losses at the Brunner Island SES primarily result from instream evaporation induced by thermal loading from the cooling water discharged to the river. The nominal maximum heat rejection rate is 6,960 million British thermal units (Btu) per hour. The project sponsor estimated the current rate of instream evaporation to be 13.100 mgd as a maximum daily average and 12.100 mgd as a maximum 30-day average, assuming full-load plant operation.

Pursuant to a settlement agreement with the Pennsylvania Department of Environmental Protection (PADEP), the project sponsor intends to install mechanical draft evaporative cooling towers along the existing plant discharge canal to reduce the temperature of the discharge to the river. The towers are expected to be operational in 2010. The project sponsor also intends to install wet-limestone, forced oxidation FGD systems for the reduction of sulfur dioxide emissions at Units 1, 2, and 3. The FGD systems are expected to become operational in 2008 (Unit 3) and 2009 (Units 1 and 2). These improvements will increase consumptive water use at the facility.

The cooling towers are expected to operate during the period March through November. When operating, the entire cooling water discharge will be diverted to the cooling towers and resulting consumptive use is calculated to be 17.200 mgd for a full-load plant operation maximum day (under design conditions that result in the removal of all of the heat added to the cooling water when passing through the condensers). During conditions other than design conditions, the cooling towers do not remove all of the heat added to the water and some residual heat will be discharged to the river (the discharge temperature will be higher than the ambient river temperature), resulting in some in-river evaporation. The project sponsor calculates that the consumptive use from cooling tower loss plus in-river evaporation will be 16.400 mgd as a maximum full-load plant operation daily average and 15.400 mgd as a maximum full-load plant operation 30-day average.

Water for the FGD systems will be taken from the cooling water flow at the steam condensers; total water use for the three units will be approximately 8.600 mgd. Consumptive water use from operation of the FGD units is estimated to be 5.700 mgd on a peak day and 4.500 mgd as maximum 30-day average.

Findings

The project is subject to Commission approval, monitoring, and reporting requirements, as per Commission Regulations §806.4(a)(1)(iii), §806.22, §806.23, and §806.30.

Although the project predates the Commission's consumptive water use and surface water withdrawal regulations, the project identified that its proposed addition of mechanical draft evaporative cooling towers and FGD systems will sufficiently increase consumptive water use to be subject to Commission Regulation §806.4, relating to consumptive use and withdrawal projects requiring review. The project sponsor has requested approval for consumptive water use of up to 23.100 mgd (peak day) and a surface water withdrawal of up to 835.000 mgd (peak day) from the Susquehanna River.

All water evaporated or otherwise lost from the cooling systems or other power generation processes, FGD systems, and evaporated off the river surface due to thermal loading is considered to be a consumptive water use subject to Commission regulation.

Commission staff recommends approval of the requested quantity of consumptive water use, 23.100 mgd on a peak day. The project sponsor should submit a plan to quantify the daily consumptive water use associated with operation of the plant and the thermal loading, and the project's total surface water withdrawal from the Susquehanna River for review and approval by Commission staff. The plan should contain metering that is accurate to within 5 percent, or other suitable methods of measurement, on the water diverted to the facility, on the wastewater and thermal discharges, and other locations, as appropriate, and on the total water withdrawal from the Susquehanna River. The project sponsor should report the daily consumptive water use and surface water withdrawal data to the Commission quarterly.

Should the proposed accounting procedure fail to measure PPL Brunner Island's total water withdrawal from and consumptive use of the Susquehanna River, the Commission reserves the right to modify the measuring, monitoring, and accounting procedures. Commission staff will provide the project sponsor with prior written notice of any required change in the measuring, monitoring, and accounting procedures. Any alternative measuring, monitoring, or accounting procedure requested by the project sponsor must be reviewed and approved by Commission staff.

Commission staff finds that consumptive water loss due to evaporation from the water surface associated with the facility's thermal discharge cannot be measured or metered directly. As such, this component of the facility's consumptive water use must be determined through indirect measurement and analytical procedures. The project sponsor has calculated the actual pre-Compact consumptive water to be 8.100 mgd, based on Commission staff's guidance regarding pre-Compact use as defined in Regulation §806.3 as "the maximum average daily quantity or volume of water consumptively used over any consecutive 30-day period prior to January 23, 1971." Commission staff concurs with this calculation of pre-Compact consumptive water use. For purposes of this docket, this quantity of consumptive water use is considered "grandfathered" and is exempt from water mitigation requirements.

The project sponsor has indicated its belief that it is entitled to a grandfathered amount at least equal to the full potential consumptive use that could have occurred at the project as of January 1971. Based on the definition contained in Regulation §806.3, Commission staff disagrees and finds that only the amount of actual consumptive use meets the definition of pre-Compact use.

Should the approved methodology for estimating future consumptive water use associated with the thermal component of the facility's discharge differ from the project sponsor's methodology used as a basis for the preparation of this docket, Commission staff recommends that the docket's pre-Compact consumptive water use be adjusted accordingly (i.e., the pre-Compact consumptive water use in the docket should be updated to reflect the same assumptions and analytical procedures approved for use in estimating future evaporative loss from the water surface associated with the facility's thermal discharge).

The project's consumptive use of water in excess of its grandfathered quantity is subject to mitigation requirements, as per Commission Regulation §806.22(b). To satisfy these requirements, the project sponsor proposes to provide monetary payments to the Commission.

The existing surface water withdrawal predates the effective date of Commission Regulation §806.4; however, the project sponsor's proposed increase in consumptive water use triggers Commission review and approval.

Commission staff recommends approval of the requested surface water withdrawal of up to 835.000 mgd (peak day), as submitted by the project sponsor. As described previously, the project sponsor should submit a plan to quantify the daily total surface water withdrawal from the Susquehanna River for review and approval by Commission staff. The plan should contain metering that is accurate to within 5 percent, or other suitable methods of measurement on the water diverted to the facility. The project sponsor should report the daily surface water withdrawal to the Commission quarterly.

The project sponsor has paid the appropriate application fee, in accordance with Commission Regulation §806.16, and in accordance with Commission Resolution No. 2005-03. The project sponsor has provided all proofs of notification, as required by Commission Regulation §806.15.

No adverse impacts to other area surface water withdrawals are anticipated. The project is physically feasible, does not conflict with or adversely affect the Commission's Comprehensive Plan, and does not adversely influence the present or future use and development of the water resources of the basin.

Decision

1. The project's surface water withdrawal from the Susquehanna River of up to 835.000 mgd and the project's consumptive use of water up to 23.100 mgd are approved pursuant to Article 3, Section 3.10, of the Compact.

2. The foregoing findings are hereby adopted and shall be incorporated into and made a part of this decision.

3. The project sponsor shall comply with all Commission regulations, including monitoring and reporting requirements, as per Commission Regulation §806.30.

4. Within one hundred twenty (120) days from the date of this approval, the project sponsor shall submit a plan to the Commission for review and approval by Commission staff that accounts for all water withdrawn from the river, the wastewater and thermal discharge, and the total consumptive water use at the facility. Following approval, the project sponsor shall execute the plan and complete any installation of meters or other approved methods of measuring surface water withdrawals and uses in accordance with the approved schedule. The project sponsor shall notify the Commission, in writing, when the meters are installed and certify the accuracy of the measuring devices to within five (5) percent of actual flow. The project sponsor shall notify the Commission when the monitoring plan has been implemented.

5. The project sponsor shall keep daily records of the project's consumptive water use and surface water withdrawal, and shall report the data to the Commission quarterly, and as otherwise required. Quarterly monitoring reports shall be submitted on-line and are due within thirty (30) days after the close of the preceding quarter. The daily quantity of water consumptively used shall be the quantity evaporated or otherwise lost from the cooling system or other power generation processes, and evaporated off the river surface due to thermal loading.

6. To satisfy the Commission's current mitigation requirements for consumptive water use set forth in Commission Regulation §806.22, the project sponsor shall make quarterly payments to the Commission based on the rate of \$0.14 per 1,000 gallons of water consumptively used by the project in excess of the grandfathered quantity. The daily quantity of water consumptively used shall be the quantity evaporated or otherwise lost from the cooling system or other power generation processes, and evaporated off the river surface due to thermal loading. Payment amounts shall be calculated by applying this rate to the daily amount of water used consumptively by the project, less the grandfathered quantity of 8.100 mgd. If the daily grandfathered quantity exceeds the project's daily consumptive water use, that day's consumptive water use is considered to be zero. Quarterly payments are due and payable within thirty (30) days after the close of the preceding quarter. The rate of payment, after appropriate notice to consumptive users of water using this method of compliance, is subject to change at the Commission's discretion.

7. The project sponsor shall maintain any meters or other measuring devices approved by the Commission, accurate to within five (5) percent, so as to provide a continuous, accurate record of withdrawals and uses, and certify to the Commission once every five (5) years, or as otherwise requested, the accuracy of all measuring devices and methods to within five (5) percent of actual flow.

8. The project sponsor shall comply with the water conservation requirements specified in Commission Regulation §806.25(b).

9. Commission approval shall not be construed to exempt the project sponsor from obtaining all necessary permits and/or approvals required for the project from other federal, state, or local government agencies having jurisdiction over the project. The Commission reserves the right to modify, suspend, or revoke this action if the project sponsor fails to obtain or maintain such approvals.

10. If the project sponsor fails to comply with the provisions of the Compact or any rule, regulation, or order of the Commission, or any term or condition of this docket, the project is subject to enforcement actions pursuant to Commission Regulation §808.

11. The Commission reserves the right to reopen any project docket or issue such additional orders, as may be necessary, to mitigate or avoid adverse impacts or otherwise to protect public health, safety, welfare, or the environment.

12. Commission approval confers no property rights upon the project sponsor. The securing of all rights necessary and incident to the project sponsor's development and operation of the project shall be the sole and exclusive responsibility of the project sponsor, and this approval shall be subject thereto.

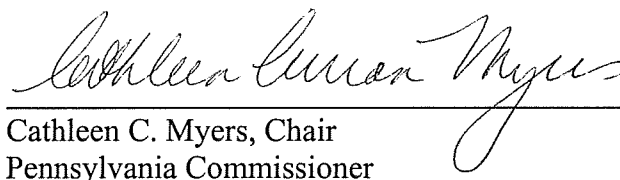
13. To satisfy the Commission's registration requirement, the project sponsor shall register with the PADEP all surface water and groundwater sources described in this docket in accordance with the Pennsylvania Water Resources Planning Act (Pennsylvania Act 220).

14. This approval is effective until September 12, 2022. As specified in Commission Regulation §806.31(e), if the project sponsor submits a renewal application no later than March 12, 2022, the existing approval shall be deemed extended until such time as the Commission renders decision on the application.

15. The project sponsor has a period of three (3) years from the date of this approval to initiate the project or such approval will automatically expire, unless an extension is requested by the project sponsor and approved by the Commission. Likewise, if the project is discontinued for such a time and under such circumstances that an abandonment of the project may be reasonably inferred, the Commission may rescind the approval of the project unless a renewal is requested by the project sponsor and approved by the Commission.

By the Commission:

Dated: September 12, 2007



Cathleen C. Myers, Chair
Pennsylvania Commissioner