

DOCKET NO. D-69-210 CP (FINAL) (Revision 12)

DELAWARE RIVER BASIN COMMISSION

**Exelon Generation Company, LLC
Limerick Generating Station Water Supply Modification Demonstration Project and
Wadesville Mine Pool Withdrawal and Streamflow Augmentation Demonstration Project
Montgomery, Bucks, Schuylkill, Berks and Chester Counties, Pennsylvania**

PROCEEDINGS

This docket is issued in response to an application submitted to the Commission by Exelon Generation Company, LLC (Exelon) on May 21, 2004 and amended on July 31, 2004, to modify Exelon's demonstration project for a water supply modification at the Limerick Generating Station (LGS).

Exelon has applied for approval to modify the Operating Plan of the LGS, a nuclear-powered electric generating station located in Limerick Township, Montgomery County, Pennsylvania, by removing surface water withdrawal restrictions related to ambient water temperature in the Schuylkill River through 2007. Exelon proposes to demonstrate, under controlled conditions, that the withdrawal of Schuylkill River water can continue without adverse impact when the background water temperature exceeds 59°F, the maximum temperature at which withdrawals can be made under the current docket (D-69-210 CP (Final)). In addition, at DRBC's request, Exelon amended its May 21, 2004 application to request an extension of the Wadesville Mine Pool Withdrawal and Streamflow Augmentation Demonstration Project (WMPD) through 2007. The WMPD was approved by [Docket No. D-69-210 CP \(FINAL\) \(Revision 11\)](#) on June 26, 2003 and extended for one year by [Commission Resolution No. 2003-25](#), adopted December 3, 2003. The June 26, 2003 docket and extension are collectively referred to herein as DA-No. 11.

The application was reviewed for approval under Section 3.8 of the *Delaware River Basin Compact*. The Montgomery, Bucks, Schuylkill, Berks and Chester County Planning Commissions have been notified of pending action on the instant docket (Docket No. D-69-210 CP (FINAL) (Revision 12), referred to hereinafter as DA-No. 12). A public hearing on DA-No. 12 was held by the DRBC on October 27, 2004.

DESCRIPTION

Purpose. The project has three purposes: First, it is intended to demonstrate that under controlled circumstances Schuylkill River water can be withdrawn by Exelon for LGS consumptive cooling water needs during periods when river water temperature exceeds 59°F, without causing adverse effects upon the Schuylkill River. Exelon's withdrawals from the Schuylkill River for consumptive cooling water needs are restricted when river temperatures below Limerick are above 59°F, except during April, May and June, when the Schuylkill River

flow, as measured at the Pottstown gaging station, is in excess of 1,791 cubic feet per second (cfs) (1,158 million gallons per day (mgd)). Second, the project is intended to demonstrate that the replacement (as provided in this docket DA-No. 12) of the current requirement to maintain 27 cfs in the East Branch Perkiomen Creek (EBPC) beginning with the initiation of pumping at the Bradshaw Reservoir (or with initiation of the WMPD), also will have no adverse impacts on the EBPC. Third, the project will extend the WMPD until December 31, 2007. The extension will permit Exelon to continue to test the proposition that augmenting the Schuylkill River's natural flow with water from the Wadesville Mine Pool and the Still Creek Reservoir in Tamaqua in order to compensate for the withdrawal of cooling water from the Schuylkill River, will have no adverse impacts on the associated waterways.

Location and Physical Features.

a. Under the Makeup Water System Operations Plan associated with DA-No. 11, Exelon utilizes several water sources to provide the necessary consumptive cooling water needs for the LGS facility. Depending on Schuylkill River conditions and the Docket conditions set forth in DA-No. 11, consumptive cooling water withdrawals for LGS are being made in the following order of priority:

1. Withdrawals from the Schuylkill River within approved temperature and flow conditions.
2. Withdrawals from the Schuylkill River equivalent to the pumping rate from the Wadesville Mine Pool, reduced by the quantity of mine pool water lost en route to LGS through evaporation.
3. Withdrawals from Perkiomen Creek, subject to sufficient natural creek flow.
4. Withdrawals from Perkiomen Creek as augmented by withdrawals from the Delaware River via the diversion project.
5. Withdrawals from the Schuylkill River equivalent to releases from the Still Creek Reservoir in Tamaqua, reduced by the quantity of Still Creek water lost en route to LGS through evaporation. No release from the Still Creek Reservoir is allowed for the consumptive use, whenever the water level in the reservoir pool is below the Operating Rule Curve shown on "[Attachment No. 1](#) (Minimum Storage Curve For Limerick Power Releases at Still Creek Reservoir herein referred to as "Operating Rule Curve").

b. The facilities that support the existing withdrawal plan (see [Attachment 2](#) - Water Diversion Diagram) are located as follows:

1. Schuylkill River

LGS is a nuclear-powered, electric generating station located in Limerick Township, Montgomery County, Pennsylvania. The LGS intake is located on the non-tidal portion of the Schuylkill River, as found on the *Phoenixville, PA* USGS Quad as follows:

INTAKE NO.	LATITUDE (N)	LONGITUDE (W)
001	40° 13' 12.5"	75° 35' 26"

The LGS intake is located at River Mile 92.47 - 48.22. Exelon utilizes Schuylkill River flow to this intake or obtains water from other sources, as necessary, from a network of diversion and storage facilities, as described below.

2. Wadesville Mine Pool

The pumping and conveyance system currently used to maintain the water level of the Wadesville Mine Pool on the Reading Anthracite Company property is located at the border of New Castle and Norwegian Townships, just west of St. Clair Borough, all within Schuylkill County, Pennsylvania.

The Wadesville anthracite minefield is located in the Llewellyn Formation and there are no active deep mines in or near the area. The Wadesville Operation extends for approximately 2,000 acres in the Townships of Norwegian and New Castle and the Borough of St. Clair, all within Schuylkill County in Pennsylvania.

The existing project facilities are found on the "Pottsville, PA" USGS Quad and are located as follows:

FACILITY	LATITUDE (N)	LONGITUDE (W)
Wadesville Pump House	40° 42' 55"	76° 12' 22"
Wadesville Outfall	40° 42' 52"	76° 12' 24"

Under DA-No. 11, the existing outfall is used to discharge mine pool water via a dry swale to East Norwegian Creek in the Schuylkill River Watershed. East Norwegian Creek joins with West Norwegian Creek to form Norwegian Creek, which flows under the Borough of Pottsville, via culvert, to join the Schuylkill River at River Mile 123.4.

The water diverted from the Wadesville Mine Pool is discharged to East Norwegian Creek through the existing outfall at River Mile 92.47 - 123.4 - 2.4 - 0.5, approximately one-half mile south of the mine pool.

3. Perkiomen Creek – Natural Flows

Natural flows of Perkiomen Creek may be used when its flow is at least 180 cfs (for the equivalent of one-unit operation) or 210 cfs (for two-unit operation) as measured at the USGS Graterford gaging station. Exelon's Perkiomen Creek Pumping Station and pipeline are used to pump water from the Perkiomen Creek to LGS (DA-No. 11).

4. Delaware River Diversion

During periods when the natural flow and temperature criteria for the Schuylkill River and the natural flow criterion for Perkiomen Creek are not met, Exelon uses an intrabasin transfer of water from the Delaware River to augment flow in the Perkiomen Creek.

The diversion of water from the Delaware River for LGS consumptive cooling water needs is accomplished through a series of pumping stations, the Bradshaw Reservoir, transmission mains, the EBPC and the Perkiomen Creek. The Point Pleasant Pumping Station, located at Delaware River Mile 156.87 in Plumstead Township, Bucks County, Pennsylvania, is owned and operated by Forest Park Water Authority (FPWA), (Docket No. D-65-76 CP (8)). It is used to pump water from the Delaware River to the Bradshaw Reservoir, as necessary, to maintain adequate reservoir volume and reserve storage. The Bradshaw Reservoir, which is owned and operated by Exelon, includes a pumping station that is used to transfer water, when required, to the EBPC through a transmission main. The water is disinfected seasonally, as required to meet the NPDES permit discharge requirements, before it reaches the EBPC by the injection of ozone into the main at Exelon's water treatment plant, which is located along the pipeline. The reservoir, transmission main and water treatment plant are owned and operated by Exelon (Docket No. D-79-52 CP). The Point Pleasant Pumping Station also diverts water from the Delaware River through the Bradshaw Reservoir for local public water supply purposes.

The rate of release into the EBPC is equal to LGS consumptive water demand plus an additional three percent to compensate for evaporative losses estimated to occur during the approximately 18-hour transit time. The flow in the EBPC enters into the main branch of Perkiomen Creek and flows downstream to a point in the Graterford Prison area, where Exelon's Perkiomen Creek Pump Station and pipeline are used to convey the water directly to the LGS.

The Point Pleasant Pumping Station can withdraw up to 95 mgd of water from the Delaware River, of which up to 46.2 mgd can be routed to EBPC for conveyance to the Perkiomen Creek at Graterford, Pennsylvania. From Graterford, up to 42 mgd of water can be pumped to the LGS. Water diverted from the Delaware River via the Point Pleasant Pumping Station is restricted to the use, conditions and service area approved in Dockets No. D-65-76 CP and DA-No. 12 and cannot be used for any other purposes unless approved by the Commission.

5. Still Creek Reservoir in Tamaqua

In the event that makeup water from the Delaware River diversion system is unavailable or is insufficient to meet the LGS needs, Exelon has a contract with the Borough of Tamaqua Water Authority (BTWA) for compensatory releases of water from its Still Creek Reservoir into the Schuylkill River. During the 2003-04 Wadesville demonstration, the BTWA's releases from Still Creek Reservoir may occur at any time to augment flow of the Schuylkill River, subject to the Operating Rule Curve ([Attachment 1](#)) established for the Still Creek reservoir.

Still Creek Reservoir is located in Rush Township, Schuylkill County, 2.3 miles north of Hometown, Pennsylvania and 5000 feet upstream from the confluence of Still Creek and the Little Schuylkill River at River Mile 92.47 - 102.1 - 30.15 - 1.0. Although the agreement between Exelon and the BTWA also allows for use of water stored in the BTWA's two Owl Creek Reservoirs, located in Tamaqua Borough, Schuylkill County, Pennsylvania at River Miles 92.47 - 102.1 - 22.1 - 1.7 and 92.47 - 102.1 - 22.1 - 2.3, the Owl Creek Reservoirs are reportedly unavailable for use by Exelon due to operational complications.

No changes in the location or capacity of any of the facilities described above are necessary to implement the demonstration project provided for in this DA-No. 12. All existing facilities of the LGS project remain as previously approved. All flows from the docket holder's facilities are metered. No new facilities are proposed.

c. **Design criteria.** Exelon proposes to demonstrate, under controlled conditions, that the withdrawal of Schuylkill River water can continue without adverse impact when the background water temperature exceeds 59°F, the maximum temperature at which withdrawals can be made under the current docket. In July 2004, an amended application and draft operating and monitoring plan were submitted after discussion with the Commission staff, the State of Pennsylvania and stakeholders. Exelon's application requests approval for:

- A multi-year demonstration period during the remainder of the 2004 season through the 2007 season associated with flow and temperature

restrictions in accordance with an approved operating and monitoring plan.

- Withdrawals not to exceed 24 million gallons per day (mgd) of LGS' consumptive cooling water needs during times when the Schuylkill River 24-hour average river ambient water temperature exceeds 59°F and the 24-hour average river flow is at or below 1,791 cubic feet per second (cfs) (but above 560 cfs) at the gaging station at Pottstown.
- Withdrawals of LGS' entire consumptive cooling water needs during times when the Schuylkill River 24-hour average river ambient water temperature exceeds 59°F and the 24-hour average river flow exceeds 1,791 cfs.
- Maintenance of minimum flow of at least 10 cfs in the East Branch Perkiomen Creek at all times in accordance with the draft Demonstration Operation and Monitoring Plan for the Joint Limerick Generating Station Water Supply Modification Demonstration And Wadesville Mine Pool Withdrawal & Stream Flow Augmentation Project (O&M Plan) ([Attachment 3](#)) that was submitted by Exelon. Development of recreational flow management plans to increase flows in the East Branch Perkiomen Creek above 10 cfs to support specific short-term recreational events.
- Establishment of a restoration and monitoring fund based on \$0.06/1,000 gallons of makeup water that is not required for LGS consumptive cooling water needs due to lifting the 59°F temperature requirement. Flows pumped to the EBPC during periods when the 59°F restriction would have been in effect, but not used for consumptive cooling water needs at the LGS, will be credited against this fund.
- Working with stakeholders regarding the design and implementation of the demonstration and restoration projects during 2005 and thereafter.
- Test periods of times during which no augmentation/makeup waters will be supplied for LGS consumptive cooling water needs (beyond the minimum 10 cfs flows in the East Branch Perkiomen Creek).
- The continuation of the Wadesville Mine Pool withdrawal and Stream Flow Augmentation Demonstration Project that was approved under Docket No. D-69-210 CP (Final) (Revision 11) and extended for one year by Commission Resolution No. 2003-25 adopted December 3, 2003.

***For the purpose of this Docket DA-No. 12, augmentation water refers to water supplied by Exelon (i.e. WMPD, Still Creek Reservoir or Perkiomen Creek) to the Schuylkill River for withdrawal at the LGS for consumptive cooling water needs. Makeup water refers to water withdrawn by Exelon from the Perkiomen Creek for the LGS consumptive cooling water needs.**

d. **Facilities.** All existing facilities of the LGS project remain as previously approved and no new facilities are proposed. The project facilities are described in paragraph “b.” above. The flows at the project facilities will continue to be metered.

e. **Other.** Exelon has submitted a draft Demonstration Operation and Monitoring Plan for the Joint Limerick Generating Station Water Supply Modification Demonstration And Wadesville Mine Pool Withdrawal & Stream Flow Augmentation Project (O&M Plan) ([Attachment 3](#)), which has been subject to agency review and has been available for public review. The O&M Plan provides for the collection of data and analysis to determine the project’s compliance with the terms of this DA-No. 12. No compromise of operational integrity or relaxation of the water quality objectives established in the Wadesville Mine Pool pumping, Tamaqua Reservoir release or Point Pleasant diversion projects is proposed.

Cost. There are no construction costs related to the implementation of this project.

Relationship to the Comprehensive Plan. The Limerick Nuclear Generating Station was added to the Comprehensive Plan on November 5, 1975 by Docket No. D-69-210 CP (Final). The project description, conditional Findings and Decision portions of the docket all were included. Docket No. D-65-76 CP (8) for the Point Pleasant Pumping Station (Delaware River Diversion), and Docket No. D-79-52 CP for the Bradshaw Reservoir are related to this DA-No. 12, as they contain requirements integral to the supply of Delaware River water for use as consumptive cooling water at the LGS facility. The project is located within the drainage area of the Pennsylvania Scenic River Area recreational designation that was included in the Comprehensive Plan by Docket No. D-78-50 CP on July 26, 1978.

BACKGROUND

Exelon has requested approval of a demonstration project to show that the current temperature restriction on use of Schuylkill River water for consumptive cooling water at its LGS can be removed without adverse impacts on the Schuylkill River.

In considering Exelon's docket application of May 21, 2004 (amended July 31, 2004), it is necessary to review some of the Commission's past docket decisions with respect to the temporary suspension of temperature restrictions and related water use restrictions for LGS. Accordingly, a background section precedes the Commission's findings.

On November 5, 1975, the Commission added the LGS to the Comprehensive Plan and approved the project under Section 3.8 of the *Compact* by Docket No. D-69-210 CP (Final). The docket also incorporated into the Comprehensive Plan the Project Description, Findings and Decision sections of Docket No. D-69-210 CP dated March 29, 1973. The "Findings" section included a subsection entitled "Source of Water Supply 1. Schuylkill River", which read as follows:

"Schuylkill River water at the plant site may be used for nonconsumptive use whenever the effluent discharged back to the river meets all applicable water quality standards.

Schuylkill River water at the plant may be used for consumptive use when flow (not including future augmentations of flow from Commission-sponsored projects) as measured at the Pottstown gage is in excess of 530 cfs (342 mgd) with one unit in operation and 560 cfs (362 mgd) with two units in operation with the following exceptions:

- (a) There shall be no withdrawals when river water temperatures below the Limerick station are above 15°C except during April, May and June when the flow as measured at the Pottstown gage is in excess of 1791 cfs (1158 mgd).
- (b) Use of the Schuylkill River will be limited to a withdrawal that will result in an effluent that meets all applicable water quality standards.

The constraints on nonconsumptive use of Schuylkill River water are necessary to prevent violation of total dissolved solids, stream quality objectives and effluent quality requirements of the Commission's water quality regulations. The constraint on consumptive use of Schuylkill River water is to protect water quantity and water quality below the Limerick Station. Both sets of constraints would be suspended in the event of any operational emergency requiring a shutdown of the plant."

In March of 1985, Philadelphia Electric Company (PECO) (currently known as “Exelon”) applied for a modification of Docket No. D-69-210 CP (Final) seeking temporary relief from the temperature limitation and the condition that water for evaporative use could not be withdrawn from the Schuylkill River when the flow at Pottstown gage (not augmented by releases from Commission sponsored reservoir storage projects) fell below the minimum flow of 530 cfs for one LGS unit in operation. A public hearing was held, and 61 comments were received and entered into the hearing record, many of which concerned the relief requested from the temperature restriction. (See Docket No. D-69-210 CP (FINAL) (REVISED), May 29, 1985). After careful consideration of the comments, the Commission approved the temporary relief from the temperature restriction, but did not approve the relief from the 530 cfs flow requirement.

In reaching its decision to grant the temporary waiver from the temperature restriction, the Commission recognized the need to protect the Dissolved Oxygen (DO) standard. It further recognized the comments of the Pennsylvania Fish Commission (PFC) (currently “Pennsylvania Fish and Boat Commission” or “PFBC”) that the special seasonal needs of aquatic life required more restrictive standards. It also recognized that “[b]ecause DO varies over the day, and a number of hours are required to shut down power plant operations if the DO criteria are triggered, it is necessary to establish a buffer or ‘margin of safety’ somewhat above Pennsylvania or Federal water quality standards in order to assure that DO levels will not be violated during actual operations.” (Docket No. D-69-210 CP (FINAL) (REVISED) May 29, 1985, p. 8.)

In summarizing its rationale for approving the temporary relief, the Commission found:

“The objective of the 59° temperature limitation contained in the original docket decision, was to prevent the Limerick project from aggravating dissolved oxygen conditions in the Schuylkill River during critical periods. The temporary substitution of direct dissolved oxygen monitoring at each critical downstream location is consistent with that objective. In addition, the dissolved oxygen monitors will provide data, not otherwise available to the water resource agencies, for better management of the Schuylkill River.”

(Docket No. D-69-210 CP (FINAL) (REVISED), May 29, 1985, p. 11.)

The “Decisions” section of the May 29, 1985 docket contained the following DO criteria that were substituted for the temperature restrictions:

- “(a) No withdrawals for consumptive use shall be made from the Schuylkill River or the natural flow of any of its tributaries whenever dissolved oxygen in the Schuylkill River at or below Limerick as measured at any

one or more of the monitoring locations: (i) is less than 7.0 mg/l instantaneous during the period March 1 to June 15, or (ii) is equal to or less than 5.1 mg/l daily average or equal to or less than 4.2 mg/l instantaneous value during the remainder of the year.”

(Docket No. D-69-210 CP (FINAL) (REVISED), May 29, 1985, p. 12.)

The Docket also contained monitoring and reporting requirements for the period ending December 31, 1985.

On December 16, 1985, PECO submitted an application (amended January 22, 1986) for a temporary modification of Docket No. D-69-210 CP (Final) (REVISED) to allow: (1) the temporary continued substitution of the condition approved in May 1985, allowing DO monitoring in place of the temperature restriction in the original docket; and (2) the option to transfer the existing consumptive use of the Schuylkill Basin waters from the Titus and Cromby generating stations on the Schuylkill to the Limerick Unit 1 generating unit. Included with its request to use DO criteria in lieu of the temperature restriction, PECO also requested that

“...the proposed DO limits be made at five out of six monitoring points noting that individual monitoring sites may be impacted by localized positions resulting from point source discharges.”

and

“...the proposed DO limits of 5.1 mg/l average and 4.2 mg/l instantaneous apply throughout the year and stated that a more restrictive limit during the fish spawning season is overly conservative.”

(Docket No. D-69-210 CP (Final) (Revision No. 5), p. 4.)

After careful consideration of the application and comments, on April 29, 1986, the Commission issued Docket No. D-69-210 CP (FINAL) (REVISION 5), approving the request for continued modifications through the period ending December 31, 1986, subject to the terms and conditions set forth in the docket. In its approval, the Commission incorporated the recommendations of the PFC with regard to the DO criteria and monitoring locations, and relied upon the monitoring data collected from August 9 through November 30, 1985. The Commission also reiterated its concern for the protection of DO levels below LGS:

“However, one of the purposes of the original 59°F temperature limitation was to prohibit any further degradation of DO during low DO conditions, by allowing

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depletion of streamflow via consumptive use at Limerick. Regardless of the cause of low DO at any one of the monitoring sites, depletion of streamflow by consumptive use at Limerick could aggravate the DO problem.”

(Docket No. D-69-210 CP (FINAL) (REVISION 5), April 29, 1986, p. 4.)

In lieu of the temperature-related restrictions, the “Decisions” section of the April 29, 1986 docket contained the following DO criteria:

“(1) For the period ending December 31, 1986, the provisions of Docket No. D-69-210 CP, [attached and included as part thereof to D-69-210 CP (Final)] headed “FINDINGS”, “Sources of Water Supply”, “1. Schuylkill River” paragraph “(a)” on page 5 are temporarily suspended, and in place thereof the following provision is substituted:

- (a) No withdrawals for consumptive use shall be made from the Schuylkill River or the natural flow of any of its tributaries whenever dissolved oxygen (i) is less than 7.0 mg/l daily average or 6.0 mg/l instantaneous during the period March 1 to June 15 at any one of the monitoring sites in riffle spawning areas located below Limerick approved by the Executive Director in consultation with the Pennsylvania Fish Commission (PFC) or (ii) is equal to or less than 5.1 mg/l daily average or equal to or less than 4.2 mg/l instantaneous value at any of the six existing monitoring stations temporarily approved by DRBC Docket No. D-69-210 CP (Final) (Revised).”

(Docket No. D-69-210 CP (FINAL) (REVISION 5), April 29, 1986, pp. 10 and 11.)

The Commission issued Docket No. D-69-210 CP (FINAL) (REVISION 6) on April 29, 1986, which approved the use of waters from Still Creek and Owl Creek Reservoirs as augmentation to be used as consumptive cooling water at LGS through December 31, 1986. (PECO applied for Revision 6 on March 4, 1986.)

On December 8, 1986, PECO submitted an application to extend the amendments contained in docket Revisions 5 and 6. On March 25, 1987, the Commission approved Resolution No. 87-2, granting PECO's request until December 31, 1987. The Commission noted that court proceedings were delaying the construction of the facilities needed to transfer Delaware River water to LGS and preventing them from being available during 1987. The Commission also noted that the operation under docket Revisions 5 and 6 did not result in any violation of DRBC standards or policies. An additional extension of Revisions 5 and 6 was approved on February 24, 1988 (Resolution No. 88-5 (Revision 7)) through December 31, 1988. On February 22, 1989, the Commission approved Revision 8, granting an extension through December 31, 1989 of the conditions originally established in Revision 5 substituting DO limitations for the earlier temperature restrictions.

On February 8, 1990, PECO submitted an application to extend the DO criteria through August 1, 1990, when the Delaware River diversion facilities were expected to be operational. On April 25, 1990, the Commission approved Revision 10, extending the DO criteria through August 1, 1990. The temperature restrictions were required to be followed after August 1, 1990. In addition, the Commission adjusted the DO monitoring sites.

Since August 1, 1990, the temperature restrictions have been in place and Exelon has complied with them.

In its current application, Exelon states that it appears there is no longer any water quality or scientific justification for the continuation 59°F temperature restrictions. Exelon has provided additional data and background information to support a demonstration project that relaxes the restriction on consumptive withdrawals for LGS during periods when the 24-hour ambient river temperature in the Schuylkill exceeds 59°F. Exelon's goal is to demonstrate that there is no reasonable potential for its LGS consumptive use withdrawals to cause violations of state or Commission water quality standards for DO, and therefore that no state or Commission limit or condition should be imposed. Furthermore, Exelon believes the restoration/monitoring fund benefits will outweigh any potential negative effects of temporary changes in DO even if they were to occur. Exelon acknowledges that there was a past need for the Commission temperature limit to ensure compliance with the DO standard established by the Commission and the State of Pennsylvania to protect the Schuylkill, even though Exelon found no technical background information for the basis of the 59°F found in the Commission record.

While Exelon provided a rationale for the requested relaxation of the temperature restriction during the demonstration project period, it did not present sufficient information to justify that having an unrestricted use of the Schuylkill River waters for LGS consumptive cooling water needs, would continue to ensure compliance with the DO standard established by the Commission and the State of Pennsylvania to protect the Schuylkill River. The Commission

has consistently expressed its concerns over the need to protect the DO standard and the aquatic biology downstream of the LGS. The Commission has used the temperature restriction as a reliably measurable criterion to accomplish this goal, and when the Commission has suspended the temperature restriction, it has substituted DO criterion. During those suspensions in 1985-90, the Commission expressed concern over the DO monitoring techniques and the ability of the LGS to react quickly if ambient DO concentrations were to drop to levels of concern. The Commission granted relief from the temperature restriction in consideration of the operating status of the LGS (i.e. only one generator was operating), the potential to temporarily augment flows (i.e. Titus and Cromby facility cutbacks, etc.) and the status of the Delaware diversion project, which would provide a more reliable alternative source of cooling water to the LGS during periods when restrictions were in place on the use of the Schuylkill River. Exelon has offered no justification for its proposal to suspend the temperature restriction without reinstating DO criteria. Moreover, Exelon's application includes copies of comments submitted in 1982-83 by the USFS, Delaware Unlimited Inc. et al. and PADER, which also raised issues regarding appropriateness of the 59°F temperature restriction. The Commission responded to these concerns at that time and continued to support the operating and temperature restrictions to protect the Schuylkill River DO and aquatic biology.

FINDINGS

a. In the past, the Commission emphasized that temperature restrictions were a readily measurable surrogate for the protection of the DO standard. It suspended the restrictions from 1985 through 1990, instituting DO criteria and monitoring in their place, in recognition of the region's power generation needs and in light of ongoing development of the additional water supply facilities required by the LGS. The temperature requirements were resumed in 1990 after the completion of the Delaware diversion facilities, which made cooling waters more available to the LGS during periods of high Schuylkill River water temperatures.

b. Although continued efforts to improve and restore the health of the Schuylkill River and its tributaries are needed, the health of the river has improved since 1975, when the Commission first instituted the temperature restriction on Exelon's LGS withdrawals. There have been significant improvements in water quality, as well as, changes in the quality of wastewater treatment and quantity of water usage and storage since the issuance of the original dockets. There also have been improvements in the monitoring technologies and analytical capability available to establish, monitor and analyze impacts on the river. Equally important, the Delaware River diversion, which was not available between 1985 and 1990, will continue to remain available for some or all of the LGS consumptive cooling water needs in the event that DO trends in the Schuylkill River approach levels of concern. Additional protection of DO levels in the Schuylkill River is afforded by: (1) a phased approach to use of Schuylkill River/Perkiomen Creek/Delaware River water during the suspension of the temperature

restrictions; (2) a continuous monitoring program to evaluate the impacts of the operational changes; (3) mandatory communication between the agencies and Exelon similar to that required under the WMPD; and (4) the authority of the DRBC's Executive Director to require the resumption of the use of Perkiomen Creek/Delaware River, Wadesville, and/or Still Creek Reservoir waters as an alternative to Schuylkill River water in the event DO trends in the Schuylkill River approach levels of concern. Extension of the WMPD provides an opportunity to analyze the potential water quality benefits of that project in conjunction with the removal of the temperature restrictions. These multiple factors all support the Commission's decision to approve this demonstration project subject to the conditions set forth in the "Decision" section and the Operation and Monitoring Program attached to this DA-No. 12.

c. The DRBC estimates that the project withdrawals, made primarily for the purpose of cooling water supply at LGS, result in a consumptive use of 75 percent of the total water use (56.24 mgd). The consumptive use percentage varies daily based on atmospheric and operational conditions. The DRBC definition of consumptive use is provided in Article 5.5.1.D of the *Administrative Manual – Part III – Basin Regulations – Water Supply Charges*.

d. Historically, during declared drought emergencies, the consumptive use make-up requirement from LGS is satisfied via releases from Merrill Creek Reservoir and/or Still Creek Reservoir. In addition, releases from the WMPD can also be used on a temporary basis.

e. The project does not conflict with the Comprehensive Plan, and is designed to prevent substantial adverse impact to the water resources related environment, while sustaining the current and future water uses and development of the water resources of the Basin.

DECISION

I. The Comprehensive Plan of the DRBC, as amended by Docket No. D-69-210 CP (Final) on November 5, 1975, is hereby revised as follows:

a. The sections of Docket No. D-69-210 CP included as part of Docket No. D-69-210 CP (Final) (dated November 5, 1975) entitled "Findings", "Sources of Water Supply", "1. Schuylkill River" paragraph "(a)" page 5 are temporarily suspended until December 31, 2007 and in place thereof the following provision is substituted:

i. Upon the written direction of the Executive Director and in accordance with the timeframe established in the O&M Plan (see [Attachment 3](#)), no unaugmented withdrawals for LGS consumptive cooling water needs shall be made from the Schuylkill River or the natural flow of any of its tributaries whenever the dissolved oxygen is less than 5 mg/l daily average or 4.5 mg/l instantaneous at the designated monitoring sites

downstream from the LGS cooling water discharge thermal mixing zone (see O&M Plan, [Attachment 3](#)).

ii. Exelon will notify the DRBC in accordance with the approved O&M Plan ([Attachment 3](#)) when the DO monitoring trends approach the standards identified in “i.” above at any of the downstream monitoring sites. The DRBC, Exelon, PADEP and the Pennsylvania Fish and Boat Commission will confer and develop a recommendation regarding whether withdrawals from the Schuylkill River should be suspended, curtailed or special testing implemented. If the parties fail to reach a joint recommendation, the Executive Director’s decision will be final and in effect during any appeal of the Executive Director’s decision.

iii. Notwithstanding condition I.a.i. above, the Executive Director, with the concurrence of the Pennsylvania representative to the Commission, may allow the continued use of the Schuylkill River for LGS consumptive cooling water needs without augmentation/makeup, if it is determined by the Executive Director that it would not have a significant impact on the River and would further the goals of this demonstration project.

b. After December 31, 2007, the provisions of Docket No. D-69-210 CP included as part of Docket No. D-69-210 CP (Final) (dated November 5, 1975) entitled “Findings”, “Sources of Water Supply”, “1. Schuylkill River” paragraph “(a)” on page 5 shall be reinstated, unless the project reports submitted to the Executive Director are determined to be satisfactory, and a one-year extension has been approved by the Executive Director, or other approval has been granted by the Commission.

II. During the multi-year term of this DA-No. 12, Exelon will be permitted to utilize the Schuylkill River for the withdrawal of consumptive cooling water at LGS as follows:

a. From the date of approval of this docket through December 31, 2005, the consumptive use augmentation/makeup requirement is removed for:

i. Withdrawals of up to 24 mgd of unaugmented Schuylkill River water for LGS consumptive cooling water needs when the Schuylkill River 24-hour average ambient water temperature exceeds 59°F at the Linfield Bridge and the 24-hour average river flow is at or below 1,791 cfs (but above 560 cfs) at the Pottstown gaging station; and

ii. Withdrawals not to exceed 42 mgd of unaugmented Schuylkill River water for LGS consumptive cooling water needs when the Schuylkill River 24-hour average river flow is above 1,791 cfs at the Pottstown gaging station and 24-hour average ambient water temperature exceeds 59°F at the Linfield Bridge.

iii. Withdrawals of up to 42 mgd from the Schuylkill River for LGS consumptive cooling water needs without augmentation/makeup requirements during testing periods approved by the Executive Director. These test periods are designed to evaluate the effects of the use of the Schuylkill River for LGS consumptive cooling water needs on DO trends in the absence of flow augmentation/makeup waters.

b. For 2006 and 2007 (and potentially 2008), based on an analysis of data from previous year's demonstration and the approval of the Executive Director one or more of the following options may be implemented:

i. Withdrawals of up to 24 mgd of unaugmented Schuylkill River water for LGS consumptive cooling water needs, when the Schuylkill River 24-hour average ambient water temperature exceeds 59°F at the Linfield Bridge and the 24-hour average river flow is at or below 1,791 cfs (but above 560 cfs) at the Pottstown gaging station, and

ii. Withdrawals not to exceed 42 mgd of unaugmented Schuylkill River water for LGS consumptive cooling water needs when the Schuylkill River 24-hour average river flow is above 1,791 cfs at the Pottstown gaging station and 24-hour average ambient water temperature exceeds 59°F at the Linfield Bridge.

iii. Withdrawals up to 42 mgd from the Schuylkill River for LGS consumptive cooling water needs without augmentation/makeup requirements during testing periods approved by the Executive Director. These test periods are designed to evaluate the effects of the use of the Schuylkill River for LGS consumptive cooling water needs on DO trends in the absence of flow augmentation/makeup waters.

iv. The Executive Director may approve withdrawal of up to 42 mgd for LGS consumptive cooling water needs without augmentation/makeup when the 24-hour average ambient water temperature is above 59°F and the 24-hour average river flow is below 1,791cfs at the Pottstown gaging station (but above 560 cfs).

c. As part of the demonstration conducted under DA-No. 12, the following will be required for all demonstration years:

i. Maintenance of at least 10 cfs flow in East Branch Perkiomen Creek at all times in accordance with the O&M Plan (see [Attachment 3](#)).

ii. Development of flow management plans to increase flows in East Branch Perkiomen Creek above 10 cfs from planned Bradshaw Reservoir releases to support specific short-term recreations events as approved by the Executive Director (see Condition II. 1. below). Copies of such plans will be sent by Exelon to the PFBC and PADEP.

iii. Development of flow management plans to increase flows in Little Schuylkill River from planned Still Creek Reservoir releases to support specific short-term recreations events (see Condition II.j. below). Copies of such plans will be sent by Exelon to the PFBC and PADEP.

iv. To assure reliability and to allow for operational flexibility, Schuylkill River flows shall continue to be augmented by releases from the Still Creek Reservoir, increased by the quantity of Still Creek water lost en route to LGS through evaporation (3%) for LGS consumptive cooling water needs in accordance with the approved O&M Plan ([Attachment 3](#)). No release from the Still Creek reservoir is allowed for LGS consumptive cooling water use whenever the water level in the reservoir pool is below the Operating Rule Curve shown on "[Attachment No. 1](#)."

v. Utilization of up to 10,000 gpm (14.4 mgd/22.4 cfs) of Wadesville Mine Pool (WMP) water, as appropriate. Total augmentation from the WMP shall not exceed 432 mg during any thirty-day period.

d. Prior to commencement of the project demonstration, Exelon will obtain the Executive Director's approval of the O&M Plan ([Attachment 3](#)). The O&M Plan will include specific monitoring stations, data collection requirements, and the reporting requirements necessary to successfully conduct and assess this demonstration project. The O&M Plan will identify the parameters subject to data collection, collection methods and responsibility for data collection. Prior to the demonstration, baseline data will be collected in accordance with the O&M Plan. The O&M Plan shall include but not be limited to the following operating and monitoring requirements: 1) for the WMP including East Norwegian Creek, Norwegian Creek and Schuylkill River 2) for releases from Still Creek Reservoir including Still Creek and the Little Schuylkill 3) for DO downstream of LGS 4) for the diversions from the Delaware River to the EBPC 5) for the calculation and reporting of the restoration and monitoring fund projects 6) communications, augmentation/makeup accounting and emergency procedures 7) responsibilities and contact information for all involved parties.

e. Exelon shall assess the demonstration and file ten hard copies and two CD-ROM electronic copies of its assessment report with DRBC prior to January 15 of the year following each year that the demonstration project is conducted. The first report shall be filed in January 2005. Each report shall include an assessment of the project and recommendations for future operation. Each report shall be placed on the DRBC website. DRBC and Exelon will meet at least twice each year to discuss the progress of the project. Unless the Executive Director, in consultation with Exelon, chooses otherwise, these meetings shall take place in connection with submittal of the annual assessment report and during the month of July.

f. The Executive Director may modify the O&M Plan ([Attachment 3](#)) if the results indicate a change is required or appropriate. The Executive Director may also modify the terms of the demonstration project to resume augmentation if the conditions warrant it. Under Article 6 of the Rules of Practice and Procedure, Exelon has the right to request a hearing if it disagrees with a decision of the Executive Director.

g. The requirement that a minimum of 27 cfs be maintained in the EBPC during the seasonal use of the Point Pleasant Diversion System is suspended during the term of DA-No. 12. The minimum 27 cfs flow requirement may be reinstated by the Executive Director at any time during the term of this docket. This condition does not affect the requirement set forth in II.c.i., above, that a flow of at least 10 cfs be maintained at all times in the EBPC.

h. The Findings section of Docket No. D-69-210 CP (Final) (Revision No. 11) determined that the waters from the Wadesville Mine Pool used to augment the Schuylkill River for LGS consumptive cooling water have the potential to cause the ambient TDS levels in the Schuylkill River to exceed the quality standard of 500mg/l at the Pottstown drinking water intake. As provided on page 9 of that docket, the WMPD must demonstrate that either the TDS instream standard is not violated at the Pottstown drinking water intake, or that augmentation waters from the Still Creek Reservoir can be used to prevent such an exceedence or be used in lieu of Wadesville Mine Pool water as consumptive cooling water at LGS. Exelon will monitor in accordance with the O&M Plan ([see Attachment 3](#)) to determine whether or not the demonstration project will cause an exceedence of the potable water supply TDS concentration objective at the nearest downstream intake from the LGS. The nearest downstream potable water supply intake of record is operated by the Pennsylvania American Water Company at river mile 92.47 – 45.7, approximately 2.5 river miles downstream.

i. After consultation with PFBC and PADEP, the Executive Director may approve requests by Exelon to increase flows in the EBPC above 10 cfs from the Bradshaw Reservoir to support short-term recreation events. Exelon shall submit its written request at least 60 days in advance of the proposed release date and demonstrating that the releases are supported by flow management plans for the event.

j. After consultation with PFBC and PADEP, the Executive Director may approve requests by Exelon to increase flows to the Still Creek above the Little Schuylkill River to support short-term recreational events. Such approval will be granted only after the review and approval by the Executive Director of a written request by Exelon, submitted at least 60 days in advance of the proposed release date and demonstrating that the releases are supported by flow management plans for the event.

k. The Executive Director may approve the extension of this demonstration project through December 31, 2008 if the project has demonstrated that the LGS withdrawals do not have an adverse impact on the Schuylkill River when river temperature exceeds 59°F and flow as measured at the Pottstown gage is less than 1,791 cfs. Any extension beyond December 31, 2008 can only be approved by action of the Commission in an amended docket.

l. Water diverted via the Point Pleasant Pumping Station is restricted to the use, conditions and service area set forth in Docket No. D-65-76 CP and cannot be used for any other purposes unless approved by the Commission.

III. Within 9 months of the issuance of this DA-No. 12, Exelon will establish a Restoration and Monitoring Fund (RMF) based on \$0.06/1,000 gallons of make-up cooling water for LGS that is not required to be supplied by Perkiomen Creek/Delaware River waters due to the suspension of the 59°F temperature restriction. A credit will be applied against this fund for flows pumped to the EBPC, but not used for LGS consumptive cooling water needs, during periods when the 59°F would have been in effect. Payments to the RMF will be made at the end of each calendar year that DA-No. 12 is in effect beginning in 2005. Exelon shall provide the RMF funds directly to a watershed-related not-for-profit or non-profit organization (both herein referred to as NPO) of Exelon's choosing, with which it has entered into an agreement for management and administration of the RMF. See [Attachment 4](#) for examples of the water accounting. Exelon may be a member of the Board of the NPO, but it may not control the organization. The agreement between Exelon and the NPO shall provide that RMF monies are to be used solely for the purpose of funding projects in the Schuylkill River Basin that are consistent with restoration and water management goals for the Schuylkill River. It shall further provide that consultation with and concurrence of the DRBC's Executive Director shall be required prior to commitment of RMF funds to any project. Exelon may participate in the generation of a list of potential projects and may, if it so chooses, participate in implementation of such projects.

IV. The following conditions from the "Decision" section of Docket No. D-69-210 CP Final (Revision 11) remain in effect unless modified by this docket amendment or by the Executive Director in the O&M Plan approval:

(1) The provisions of Docket No. D-69-210 (attached and included as part thereof to D-69-210 CP (Final) subsection 1, relating to withdrawals from the Schuylkill River headed "Findings", "Sources of Water Supply", "1. Schuylkill River" is revised by the addition of a new paragraph (e), which reads as follows:

(e) Water may be withdrawn from the Wadesville Mine Pool and Still Creek Reservoir to augment Schuylkill River flows for subsequent withdrawal for consumptive use at LGS for the proposed 2005-2007 (and 2008, if extended) demonstration project. Use of the docket holder's existing approved emergency back-up source, the Tamaqua Reservoir System, shall continue in accordance with Exelon's O&M Plan ([Attachment 3](#)), upon approval of such plan by the Executive Director. Project operations shall be subject to modification by the Executive Director if data or information indicate that modification is needed. For purposes of the proposed demonstration project, total augmentation from Wadesville Mine Pool shall not exceed 432 million gallons during any 30-day period.

(2) The following conditions (which were added to the provisions of Docket No. D-69-210 CP (Final), "Decision" on page 15, subheaded II and as temporarily amended by Docket No. DA-12):

(ee) During the demonstration, Exelon shall require Reading Anthracite Company to annually perform a maintenance inspection for erosion prior to the startup of augmentation from the Wadesville Mine Pool. The channel from the discharge point to approximately 50 feet downstream of the New Wadesville Road shall be inspected and repaired if any erosion problems have occurred that inhibit the discharge or are as a result of the discharge.

(ff) Condition "(ff)" has been superseded by O&M Plan (see [Attachment 3](#)).

(gg) The Executive Director may modify the conditions of the WMPD project relating to either withdrawal or discharge or both, if monitoring and/or characterization data indicate that modifications are appropriate for the protection of in-stream water quality and flow.

(hh) The Executive Director may modify or suspend mine pool water discharges and/or Tamaqua releases during the demonstration project, if evidence indicates that such discharges or releases are causing violations of water quality standards and/or unacceptable impacts to the aquatic biota of the receiving waters.

(ii) There shall be no increase in the installed depth of the Wadesville Mine Pool pump casing for consumptive use augmentation without prior notification to DRBC and approval by the Executive Director.

(jj) During the demonstration project, Exelon shall maintain detailed, accurate records of mine pool water discharges. Exelon shall notify DRBC of any planned

initiation, cessation or modification of mine pool water discharges in accordance with the approved O&M Plan ([Attachment 3 DA-No. 12](#)).

(kk) During the demonstration project, in any period beginning four days after initiation of pumping from the Wadesville Mine Pool and ending two days after cessation of pumping from the Wadesville Mine Pool, Exelon is authorized to withdraw at its LGS intake a quantity of water equal to 97% of its pumpage rate from the mine pool, and the temperature and flow restrictions specified in subsections 1.a and 1.b of the “Findings” section of Docket No. D-69-210 CP (attached and included as part thereof of Docket No. D-69-210 CP (Final) (dated November 5, 1975)) shall be temporarily suspended.

(3) Water temperature and aquatic habitat shall be monitored in the Little Schuylkill River during releases from the BTWA Reservoir system for purposes of flow augmentation during the demonstration project.

(4) All monitoring information and mine pool water level data shall be compiled and submitted weekly to the DRBC when releases are being made. The results of the annual erosion inspection shall be reported in the annual report by January 15th of each year.

V. The following conditions shall also apply during the term of this docket:

a. The monitoring, drought emergency procedures, and corrective actions regarding erosion required under related dockets and permits shall continue as directed.

b. Docket approval is subject to all conditions, requirements, and limitations imposed by the PADEP, and such conditions, requirements, and limitations are incorporated herein, unless they are less stringent than the Commission’s.

c. The operational records and sampling results shall be provided to the DRBC on a weekly basis, as available, for the purpose of posting the data on the DRBC’s web site.

d. The docket holder shall pay for surface water use in accordance with the provisions of Resolution No. 74-6, as amended.

e. Nothing herein shall be construed to exempt the docket holder from obtaining all necessary permits and/or approvals from other State, Federal or local government agencies having jurisdiction over this project.

f. A complete application for the renewal of this docket, or a notice of intent to cease the operations (withdrawal, discharge, etc.) approved by this docket by the expiration

date, must be submitted to the DRBC at least 6 months prior to the expiration date below (unless permission has been granted by the DRBC for submission at a later date), using the appropriate DRBC application form. In the event that a timely and complete application for renewal has been submitted and the DRBC is unable, through no fault of the docket holder, to reissue the docket before the expiration date below, the terms and conditions of this docket will remain fully effective and enforceable against the docket holder pending the grant or denial of the application for docket approval.

g. The issuance of this docket approval shall not create any private or proprietary rights in the water of the Basin, and the Commission reserves the rights to amend, alter or rescind any actions taken hereunder in order to insure the proper control, use and management of the water resources of the Basin.

h. If the operation of this project significantly affects or interferes with any domestic or other existing wells or surface water supplies, or if the docket holder receives a complaint by any user of wells or surface water supplies within the zone of influence of the withdrawal, the docket holder shall immediately notify the Executive Director of any complaints by users of wells or surface water supplies within the zone of influence of the withdrawal, and unless excused by the Executive Director, shall investigate such complaints. Any well or surface water supply which is substantially adversely affected, or rendered dry or otherwise unusable as a result of the docket holder's project withdrawal, shall be repaired, replaced or otherwise mitigated at the expense of the docket holder. A report of investigation and/or mitigation plan prepared by a hydrologist shall be submitted to the Executive Director as soon as practicable. The Executive Director shall make the final determination regarding the validity of such complaints, the scope or sufficiency of such investigations, and the extent of appropriate mitigation measures, if required. The Executive Director may modify or suspend this approval, or require mitigating measures, pending additional review.

VI. The above revisions to the LGS Project are hereby approved pursuant to Section 3.8 of the *Compact*, subject to the conditions above.

BY THE COMMISSION

APPROVAL DATE: October 27, 2004

EXPIRATION DATE: December 31, 2008