DOCKET NO. D-1978-083 CP-2

DELAWARE RIVER BASIN COMMISSION

Aqua Pennsylvania, Inc. – Bristol System
Groundwater Withdrawal
Bristol Township, Bucks County, Pennsylvania

PROCEEDINGS

This docket is issued in response to an Application submitted by East Latitude, LLC on behalf of Aqua Pennsylvania, Inc. (Aqua PA) to the Delaware River Basin Commission (DRBC or Commission) on June 11, 2014 for a renewal and approval of an allocation of groundwater and review of a groundwater withdrawal project (Application). The groundwater withdrawal project was approved by the Pennsylvania Department of Environmental Resources (PADER) on November 22, 1978 (Permit No. 0978507). The new Wells Nos. 9 and 10 were reviewed under the Pennsylvania Safe Drinking Water Act for public water supply permits and approved by the Pennsylvania Department of Environmental Protection (PADEP) on March 31, 2014, but it is withholding the issuance of Permit No. 0913523 until the project is approved by the Commission.

The Application was reviewed for inclusion in the Comprehensive Plan and for approval under Section 3.8 of the *Delaware River Basin Compact*. The Bucks County Planning Commission has been notified of pending action on this docket. A public hearing on this project was held by the DRBC on September 9, 2014.

A. DESCRIPTION

1. Purpose. The purpose of this project is to approve new Wells Nos. 9 and 10 for inclusion in the Aqua PA Bristol System and to renew the approval of up to 95.69 million gallons per month (mgm) of water to the docket holder's public water supply distribution system from existing Wells Nos. 1, 2, 3, 5, 6, 7, 8, 9 and 10 in the Edgely Well Field. Aqua PA is not requesting an increase in groundwater withdrawal allocation.

On June 27, 2014, the DRBC Executive Director approved an emergency certificate for this groundwater project. The emergency certificate granted immediate approval of two newly constructed and tested wells – Wells Nos. 9 and 10 – with no increase above the previously approved water system allocation of up to 95.69 mgm, pursuant to Section 2.3.9.B of the Administrative Manual, Part II, *Rules of Practice and Procedure* (RPP).

2. Location. The project wells are completed in the unconsolidated sand and gravel aquifer and are located in the Delaware River Watershed, in Bristol Township, Bucks County, Pennsylvania. The Delaware River near the project site is designated by the PADEP as supporting Warm Water Fishes (WWF) and Migratory Fishes (MF).

Specific location information has been withheld for security reasons.

3. Area Served. The docket holder's Bristol water distribution system is connected to the Aqua PA Bensalem and Main system and water use from the three systems is combined. The interconnected systems in this area serve Bristol Borough, Bristol and Bensalem Townships, Bucks County, Pennsylvania as shown on a map entitled "Service Area and Well Field Location Plan", submitted with the Application.

For the purpose of defining Area Served, the Application is incorporated herein by reference consistent with conditions contained in the DECISION section of this docket.

4. Physical features.

a. Design criteria. The Aqua PA – Bristol System combined with the Bensalem and Main system currently serves water to approximately 24,452 domestic, 2,295 commercial, 173 industrial, 120 institutional and 739 other service connections and records an existing average and maximum water demand of 5.705 million gallons per day (mgd) and 9.003 mgd, respectively. Aqua PA projects the 10-year average and maximum water demand to increase to 7.000 mgd and 15.643 mgd, respectively. The Bristol System includes a surface water intake that is allocated to withdrawal up to 330.0 million gallons per 30 days; the surface water intake was most recently approved by DRBC Docket No. D-1989-097 CP on April 25, 1990. Aqua PA has a contract to purchase up to 3.5 mgd from Bucks County Water and Sewer Authority (BCWSA) to supply water to their eastern Division. The allocation of 95.69mgm should be sufficient to meet the future demands of the Aqua PA – Bristol system.

b. Facilities. The existing project wells have the following characteristics:

WELL NO.	DEPTH (FEET)	CASED DEPTH/ CASING DIAMETER	SCREENED INTERVAL (FEET TO FEET)	PUMP CAPACITY (GPM)	YEAR DRILLED
1	21	NA	NA	126	1980
2	25	NA	NA	450	1980
3	26	NA	NA	500	1980
5	23	NA	NA	600	1980
6	35	NA	NA	500	1965
7	23	NA	NA	350	1965
8	75	NA	NA	198	1972
9	28	19	20-28	NA*	2012
10	36	17	20-35	NA*	2013

*Well Nos. 9 and 10 presently do not have pumps installed in the wells.

All water service connections are metered.

All wells are metered.

Prior to entering the distribution system, the groundwater is aerated, treated for ammonia and phosphate and chlorinated.

The project facilities are all above the 100-year flood elevation, except for Well No. 8 which is currently not in operation.

The water system is presently interconnected with the BCWSA distribution system and Aqua PA purchases up to 3.5 mgd to supply water to its Eastern Division.

System storage facilities have the following capacities:

LOCATION	CAPACITY (MG)
Edgely	2.0
Bristol	4.0
Croydon	4.3
TOTAL:	**10.3**

c. **Other.** Wastewater is conveyed to the Lower Bucks County Joint Municipal Authority sewage treatment facility most recently approved by DRBC Docket No. D-1993-068 CP-2 on July 10, 2013. The PADEP issued its most recent NPDES Permit No. PA0026468 on October 24, 2012 for this treatment facility. The treatment facility has adequate capacity to receive wastewater from the proposed project.

d. **Relationship to the Comprehensive Plan**. The docket holder's wells were previously included in the Comprehensive Plan by Docket Nos. D-1966-032 CP, D-1971-216 CP and D-1978-083 CP, which were approved on June 22, 1966, December 4, 1974 and January 24, 1979, respectively. Issuance of this docket will continue the public water supply distribution system in the Comprehensive Plan.

e. **Cost.** The overall cost of this project is estimated to be $215,000.

B. FINDINGS

48-Hour Pumping Test of Well No. 9

The Edgely Well Field is currently operating using six production Wells Nos. 1, 2, 3, 5, 6 and 7. Well No. 8 is currently not operated and Well No. 4 is not operable due to significant well screen erosion and sedimentation. Well No. 4 is being replaced by Well No. 9.

On January 8 through January 10, 2013, a 48-hour continuous-rate pumping test was conducted to assess withdrawal capabilities of Well No. 9. The constant rate pumping test was also conducted to assess the underlying aquifer characteristics and potential impacts to the local hydrologic system. The average pumping rate of the test on Well No. 9 was approximately 517 gallons per minute (gpm). Discharge from the pumping well was directed 200 feet away from the pumping well, and was conveyed into the Delaware River. Well No. 9 was pumped for a total period of 2,911 minutes.

Groundwater response monitoring was conducted in the pumping well (Well No. 9), six (6) production wells (1, 2, 3, 5, 7 and 8) and seven (7) monitoring wells (B1, B2, B3, B4, B5, B6 and B7). The pumping well and monitoring wells B2, B3 and B5 were monitored with electronic dataloggers; the remaining wells were monitored manually. Monitoring wells ranged in distance to the pumping well from approximately 55 feet (production Well No. 5) to approximately 730 feet (monitoring well B6).

Prior to the start of the pumping test, Well No. 9 had a static water level of 5.95 feet below top of casing. Maximum drawdown observed at the pumping well, after approximately 48 hours of pumping was 6.34 feet (water level of 12.29 feet). Drawdown from the pumping at Well No. 9 was observed in all of the production and monitoring wells, and ranged from 0.2 to 1.7 feet. The magnitude of interference varied with proximity to Well No. 9, greater drawdown occurred at the closer wells.

The pumping test of Well No. 9 was conducted concurrently with the daily pumping of the other six (6) wells in the Edgely Well Field. It is unknown if production from multiple wells over a longer period of time will result in additional declines in the water table of the well field. It was recommended by the consultant that each of the wells be limited to a maximum production water level to the top of each well screen, in lieu of running multiple pumping tests on additional production wells. There should be an ongoing analysis of the production water levels and daily production to base the estimate for the sustainable well field production.

The observed drawdown in Well No. 9 was used to calculate aquifer parameters to characterize the underlying aquifer. The estimated average transmissivity value for the Well No. 9 test data was 183,464 gpd/ft. at the test rate of 517 gpm. An average Storativity of 0.013 was calculated from the drawdown data observed at eight wells monitored during the pumping test.

The DRBC has reviewed the hydrogeological report for the Well No. 9 pumping test. No adverse impacts are expected to occur to the local hydrologic system due to pumping from Well No. 9.

48-Hour Pumping Test of Well No. 10

Well No. 10 will be used for an additional water source in the Edgely Well field.

On April 16 through April 18, 2013, a 48-hour continuous-rate pumping test was conducted to assess withdrawal capabilities of Well No. 10. The constant rate pumping test was also conducted to assess the underlying aquifer characteristics and potential impacts to the local

hydrologic system. The average pumping rate of the test on Well No. 10 was approximately 206 gallons per minute (gpm). Discharge from the pumping well was directed 400 feet away from the pumping well, and was conveyed into the Delaware River. Well No. 10 was pumped for a total period of 2,882 minutes.

Groundwater response monitoring was conducted in the pumping well (Well No. 10), six (6) production wells (1, 2, 3, 5, 7 and 8) and seven (7) monitoring wells (B1, B2, B3, B4, B5, B6 and B7). The pumping well and monitoring wells B1, B2, B3, B4 and B5 were monitored with electronic dataloggers; the remaining wells were monitored manually. Monitoring wells ranged in distance to the pumping well from approximately 45 feet (monitoring well B5) to approximately 730 feet (monitoring well B6).

Prior to the start of the pumping test, Well No. 10 had a static water level of 18.2 feet below top of casing. Maximum drawdown observed at the pumping well, after approximately 48 hours of pumping was 3.8 feet (water level of 22.0 feet). Drawdown from the pumping at Well No. 10 was observed in Well No. 9 and monitoring well B5, the estimated drawdown was <0.5 feet and <1.0 feet, respectively.

The pumping test of Well No. 10 was conducted concurrently with the daily pumping of the other six (6) wells in the Edgely Well Field. It is unknown if production from multiple wells over a longer period of time will result in additional declines in the water table of the well field. It was recommended by the consultant that each of the wells be limited to a maximum production water level to the top of each well screen, in lieu of running multiple pumping tests on additional production wells. There should be an ongoing analysis of the production water levels and daily production to base the estimate for the sustainable well field production.

The observed drawdown in Well No. 10 was used to calculate aquifer parameters to characterize the underlying aquifer. The estimated average transmissivity value for the Well No. 9 test data was 192,500 gpd/ft. at the test rate of 206 gpm. An average Storativity of 0.062 was calculated from the drawdown data observed at Well No. 9 and monitoring well B5 monitored during the pumping test.

The DRBC has reviewed the hydrogeological report for the Well No. 10 pumping test. No adverse impacts are expected to occur to the local hydrologic system due to pumping from Well No. 10.

Water Audits for Public Water Supply Systems Serving Greater than 100,000 gpd

Section 2.1.8 of the *Water Code* states that it is the policy of the Commission to establish a standardized water audit methodology for owners of water supply systems serving the public to ensure accountability in the management of water resources. Voluntary Water Audits were encouraged for public water supply systems through December 31, 2011 (Section 2.1.8.B.). Effective January 1, 2012, the owners of each public water supply system are required to implement an annual calendar year water audit program conforming to IWA/AWWA Water Audit Methodology (AWWA Water Loss Control Committee (WLCC) Water Audit Software) and corresponding AWWA guidance (Section 2.1.8.C). Water audits shall be submitted annually

to the Commission by March 31. Aqua PA submitted their most recent Water Audit for the Bristol System on August 29, 2013.

The DRBC estimates that the project withdrawals, used for the purpose of public water supply, result in a consumptive use of 10 percent of the total water use. The DRBC definition of consumptive use is defined in Article 5.5.1.D of the *Administrative Manual – Part III – Basin Regulations – Water Supply Charges*.

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

C. DECISION

I. Effective on the approval date for Docket No. D-1978-083 CP-2 below:

a. The project described in Docket Nos. D-1978-083 CP, D-1966-032 CP and D-1971-216 CP are removed from the Comprehensive Plan to the extent that it is not included in Docket No. D-1978-083 CP-2; and

b. Docket Nos. D-1978-083 CP, D-1966-032 CP and D-1971-216 CP are rescinded and replaced by Docket No. D-1978-083 CP-2; and

c. The project and the appurtenant facilities described in the Section A "Physical Features" of this docket shall be added to the Comprehensive Plan.

II. The project and appurtenant facilities as described in the Section A "Physical features" are approved pursuant to Section 3.8 of the *Compact*, subject to the following conditions:

a. 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. Within 60 days (November 10, 2014), the docket holder shall provide written confirmation to the Commission that it has registered and reported with PADEP all surface and groundwater sources described in this docket in accordance with the Pennsylvania Regulations (Title 25 - Environmental Protection, [25 PA. CODE CH. 110], Water Resources Planning).

b. The wells and operational records shall be available at all times for inspection by the DRBC.

c. The wells shall be operated at all times to comply with the requirements of the *Water Code* and *Water Quality Regulations* of the DRBC.

d. During any month, the combined withdrawal from all well sources shall not exceed 95.69 million gallons. No well shall be pumped above the maximum instantaneous rate and monthly allocation as indicated below:

WELL NO.	MAXIMUM INSTANTANEOUS RATE (GPM)	MONTHY ALLOCATION (MILLION GALLONS)
1	126	5.642
2	450	20.088
3	500	22.32
5	600	26.784
6	500	22.32
7	350	15.624
8	198	8.835
9	517	23.064
10	206	9.207

e. No well may be pumped at such a rate that lowers water levels in the wells below the top of the well screen.

f. The wells shall be equipped with readily accessible capped ports and minimum ½ inch inner diameter (ID) drop pipes so that water levels may be measured under all conditions. Existing wells are to be similarly equipped, where possible, with readily accessible ports and ½ inch ID drop pipes as repairs or modifications are made at each existing well.

g. The project withdrawals shall be metered with an automatic continuous recording device that measures to within 5 percent of actual flow. An exception to the 5 percent performance standard, but no greater than 10 percent, may be granted if maintenance of the 5 percent performance is not technically feasible or economically practicable. A record of daily withdrawals shall be maintained, and monthly totals shall be reported annually by March 31, to the PADEP. Withdrawal records shall be available at any time to the Commission if requested by the Executive Director.

h. Each new water service connection shall include a water meter in accordance with the DRBC's Resolution No. 87-7 (Revised).

i. The docket holder shall continue to implement its Water Conservation Plan as approved by PADEP, and shall report to the PADEP on the actions taken pursuant to this program and the impact of those actions as requested by the PADEP.

j. No water service connections shall be made to newly constructed premises with plumbing fixtures and fittings that do not comply with water conservation performance standards contained in Resolution No. 88-2 (Revision 2).

k. The docket holder shall implement to the satisfaction of the PADEP, a drought or other water supply emergency plan.

l. In accordance with DRBC Resolutions No. 87-6 (Revised) and No. 2009-1, the docket holder shall continue to implement to the satisfaction of the PADEP, the systematic program to monitor and control leakage within the water supply system. The program shall at a minimum include: periodic surveys to monitor leakage, enumerate non-revenue water and determine the current status of system infrastructure; recommendations to monitor and control leakage; and a schedule for the implementation of such recommendations. The docket holder shall proceed expeditiously to correct leakages and unnecessary usage identified by the program.

m. In accordance with DRBC Resolution No. 2009-1 and Section 2.1.8 of the Water Code, the docket holder shall implement an annual calendar year water audit program conforming to IWA/AWWA Water Audit Methodology (AWWA Water Loss Control Committee (WLCC) Water Audit Software) and corresponding guidance. Water audits shall be submitted annually to the Commission by March 31.

n. No new water service connections shall be made to premises connected to sewerage systems which are not in compliance with all applicable effluent limits contained in State permits and the *Water Quality Regulations* of the Commission.

o. The docket holder shall implement to the satisfaction of the PADEP, a continuous program to encourage water conservation in all types of use within the facilities served by this docket approval. The docket holder will report to the PADEP, on the actions taken pursuant to this program and the impact of those actions as requested by the PADEP.

p. 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.

q. The area served by this project is limited to the service area as described above. Any expansion beyond this area is subject to review in accordance with Section 3.8 of the *Compact.*

r. Unless an extension is requested and approved by the Commission in advance, in accordance with paragraph 11 of the Commission's Project Review Fee schedule (Resolution No. 2009-2), the docket holder is responsible for timely submittal of a docket renewal application on the appropriate DRBC application form at least 12 months in advance of the docket expiration date set forth below. The docket holder will be subject to late charges in the event of untimely submittal of its renewal application, whether or not DRBC issues a reminder notice in advance of the deadline or the docket holder receives such notice. 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 (or the later date established by an extension that has been timely requested and approved), the terms and conditions of the current docket will remain fully effective and enforceable against the docket holder pending the grant or denial of the application for docket approval.

s. 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 right 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.

t. If the monitoring required herein, or any other data or information demonstrates that the operation of this project significantly affects or interferes with any domestic or other existing uses of ground or surface water, or if the docket holder receives a complaint by any existing ground or surface water users within the zone of influence of the withdrawal, the docket holder shall immediately notify the Executive Director of any complaints by any ground or surface users within the zone of influence of the withdrawal, and unless excused by the Executive Director, shall investigate such complaints. The docket holder should direct phone call notifications of potential well or surface water interference or complaints of interference to the DRBC Project Review Section at 609-883-9500, extension 216. Oral notification must always be followed up in writing directed to the Executive Director. In addition, the docket holder shall provide written notification to all potentially impacted users of wells or surface water supplies of the docket holder's responsibilities under this condition. Any ground or surface water user which is substantially adversely affected, rendered dry or otherwise diminished 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.

u. The Executive Director may modify or suspend this approval or any condition thereof, or require mitigating measures pending additional review, if in the Executive Director's judgment such modification or suspension is required to protect the water resources of the Basin.

v. For the duration of any drought emergency declared by either Pennsylvania or the Commission, water service or use by the docket holder pursuant to this approval shall be subject to the prohibition of those nonessential uses specified by the Governor of Pennsylvania, the Pennsylvania Emergency Management Council, PADEP, or the Commonwealth Drought Coordinator, to the extent that they may be applicable, and to any other emergency resolutions or orders adopted hereafter by the Commission.

w. Any person who objects to a docket decision by the Commission may request a hearing in accordance with Article 6 of the Rules of Practice and Procedure. In accordance with Section 15.1(p) of the *Delaware River Basin Compact*, cases and controversies arising under the *Compact* are reviewable in the United States district courts.

BY THE COMMISSION

APPROVAL DATE: September 10, 2014

EXPIRATION DATE: September 10, 2024