SUSQUEHANNA RIVER BASIN COMMISSION
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Groundwater Withdrawal Application

Source Name: Beech Mountain Well 2

1. Project Sponsor:

Company Name:	Aqua Pennsylvania, Inc.		
Address:	762 West Lancaster Avenue		
City:	Bryn Mawr	**State:** PA	**Zip:** 19010
Contact Person:	Anthony Fernandes	**Title:**	Manager, Water Resources Engineering
Telephone:	610-645-1132	**Fax:**	
Mobile:		**E-mail:**	TLFernandes@aquaamerica.com

Facility Location:	
State:	PA
County:	Luzerne
Municipality:	Butler Township
Subbasin:	Middle Susquehanna
Date operations will begin:	6/01/2012
Date project sponsor began operation:	6/01/2012

4. Project Water Requirements:

Water Use:	**Past**	**Existing**	**Projected**
Average:	0 (mgd)	0.207 (mgd)	0.156 (mgd)
Maximum:	0 (mgd)	0.255 (mgd)	0.192 (mgd)
System Capacity:	0 (mgd)	0.41 (mgd)	0.41 (mgd)

5. Requested Use or Withdrawal:

Estimated Hours of Operation:	12
Maximum Instantaneous Withdrawal Rate: (gpm)	100
Peak 24-Hour Day: (mgd)	0.144
Maximum 30 Day Average: (mgd)	0.144

6. Withdrawal Location:
Well Latitude:
Well Longitude:

9. Existing Sources of Water (if applicable):

Wells:

Well ID:	Well 1	**Date Drilled:**	1/1/1972
Latitude:		**Longitude:**	
Use:	currently used 4 to 10 hours per day		
Metered: True		**SRBC Docket Number:** N/A	
Existing Pump Capacity:		140	

Current # of days used during calendar year:	365
Current Average Daily Withdrawal:	0.072

12. Aquifer Test Information:
Application Includes: Aquifer Test Plan or Waiver Request

14. Source Information:
☑ Well ☐ Spring ☐ Other
Identification No.: Well 2
State ID or Permit No.: PWSID#2400114

1.0 Summary

The Beech Mountain Water System is located in Butler Township, Luzerne County, Pennsylvania near the I-80 and I-81 interchange. The development, Beech Mountain Lakes Resort, rests on the northern slope of Green Mountain and is bordered to the north by Beech Mountain Lake. The development drains into Nescopeck Creek.

Aqua Pennsylvania, Inc. (Aqua) purchased the water assets from Total Environmental Services, Inc. (TESI) in June of 2012. The water system is composed of 65,908 lineal feet of water main, two production wells and well stations, and one 120,000-gallon concrete ground storage tank.

The water system and development was constructed in phases through the 1970's and 1980's. Aqua currently has 930 customers at Beech Mountain. The development does have undeveloped lots and home construction does continue within the development.

2.0 Production

Source water is provided to Beech Mountain through Well 1 and Well 2. These wells were constructed, tested, permitted in the early 1970's. The well stations and pumping schemes for both wells are identical. The well is pumped into the well house where sodium hypochlorite is added for disinfection. From there the water flows into a clear well that also acts as the chlorine contact tank. From the clear well, the water is pumped into the distribution system via a flooded suction pit-less adaptor. The table below compares the DEP Permitted capacity verses the current capacity of each well.

	PA DEP Permitted Capacity (GPM)	Current Well Capacity (GPM)	Lost Capacity (GPM)
Well 1	150	88	62
Well 2	135	64	71

Beech Mountain currently produces an average of 206,660 GPD (143.5 GPM)

3.0 Distribution

The 65,908-LF distribution system is composed of 3-, 4-, 6-, and 8-inch Ductile Iron, PVC SDR 21, and Class 150 Asbestos Cement Pipe (ACP). The distribution system consists of one pressure zone with a hydraulic grade of 1420-msl. Pressures range from 40- to 170-PSI. Pipe in the areas of high pressure (pressure greater than 150-PSI) was constructed of Ductile Iron which has a pressure rating of 350 PSI. The remainder of the system was constructed with PVC SDR 21, which has a pressure rating of 200-PSI, and Class 150 Asbestos Cement, which has a pressure rating of 150-PSI).

Water service material also varies throughout the system. To date, materials encountered include K-Copper, thin wall and thick wall polyethylene (PE), PVC of various schedules, and

polybutylene (PB). The PB Pipe found only has a pressure rating of 25-PSI and was intended to be used for irrigation.
Since June of 2012 to the end of 2014, there have been 190 water leaks with the majority of them located on Aqua's side of the domestic water services. Most of these leaks were found on PB or thin walled PE.

3.1 Water Main Replacements

By the end of 2014, Aqua has replaced over 19,000-LF of PVC and ACP with 8-inch Class 52 Ductile Iron Pipe (DIP) at a cost of $2,288,000. As water main was replaced, Aqua also renewed 295 domestic water services up to and including the curb stop. Service replacement has cost $425,000.

Aqua anticipated spending $5.43 Million from 2015 to 2023 on water main replacements in Beech Mountain. This could pay for the replacement of approximately 36,500-LF of water main. Aqua will also continue to replace the domestic water services.

3.2 Pressure Zone Separation Project

In 2012, Aqua began to analyze the hydraulics of the Beech Mountain Water System and from this, a Pressure Zone Separation Project was conceived. This project was completed in February of 2015 and is in service. This project split the single pressure zone. This split parallels Four Seasons Drive and Edge Rock Drive, the main roadways in the development.

The high pressure zone, 1420-msl, sees a pressure range of 40- to 140-PSI. The low pressure zone, 1275-msl, sees a pressure range of 50- to 95-PSI. It is anticipated that this decrease in pressure, a 60-psi reduction in the lower pressure zone, will decrease water loss and decrease the likelihood of water main and service leaks.

The pressure zone separation project was constructed at a cost of $425,000.

4.0 Water Storage

Beech Mountain is currently serviced by a 120,000-gallon concrete ground storage tank. The tank is more than 50% in the ground and does not meet PA DEP's current standards. The storage tank is also undersized. The average day usage is typically recommended, which is over 200,000-Gallons. Beech Mountain Water system also provides fire protection. The current water storage tank meets the minimum requirement for 1,000-GPM, 2-Hour fire.

Aqua anticipates on replacing the water storage tank by 2017 with a 200,000- to 400,000-gallon welded carbon steel ground storage tank.