



COUNTY OF DUTCHESS
DEPARTMENT OF BEHAVIORAL AND COMMUNITY HEALTH
DIVISION OF ENVIRONMENTAL HEALTH SERVICES

November 10, 2020

Ed Balicki, Director of Operations
City of Beacon Water Department
460 Liberty Street
Beacon, NY 12508

Re: City of Beacon Water Supply, PWS ID: #1302760

Dear Mr. Balicki:

Your water supply was inspected on October 21, 2020. You and your operator, Matt Fezza assisted.

SYSTEM DESCRIPTION

The Beacon water system serves about 19,100 people and 4,200 service connections in the City of Beacon and the Polo Fields (PWS #1330557) in the Town of Fishkill. The city has been growing through various developments. Please provide this department with an update on these numbers. Water is also sold to Rombout Water District (PWS #1319167) in the Town of Fishkill.

The water system consists of three surface water reservoirs and 3 groundwater wells that are blended at a direct filtration water treatment plant. The water is then sent into a distribution system with four pressure zones. Three storage tanks provide finished water storage. The two high pressure zones are each pressurized by its own pump station. The low-pressure zone near the river is regulated by a pressure reducing valve.

The system has grown as evidenced by the following partial list of water supply permits granted to the City of Beacon:

- WSA 561, 1930 Authorized Construction of Cargill Reservoir and use of the Mount Beacon and Melzingah Reservoirs
- WSA 1812 March 9, 1948; Well 1
- WSA 7045 April 17, 1980; Well 2
- WSA 7099 December 11, 1980; Well 1 refurbishment; limits total instantaneous flow from both wells to 1750 gpm.
- WSA 9148 May 31, 1995; authorizes Village of Fishkill to provide up to 1.2 MGD to Beacon through an 8,700-foot long water pipe.

☐ 223 Main Street, Beacon, New York 12508 • (845) 838-4801 • Fax (845) 838-4824

☐ 131 County House Road, Millbrook, New York 12545 • (845) 677-4001 • Fax (845) 677-4008

☒ 85 Civic Center Plaza - Suite 106, Poughkeepsie, New York 12601 • (845) 486-3404 • Fax (845) 486-3545 • TTY (845) 486-3417

HealthInfo@DutchessNY.gov
DutchessNY.gov/DBCH

- WSA 10202 December 10, 2001; permits the City to provide up to 500,000 gpd to Rombout Water District through a 6,400-foot 12-inch diameter pipe.
- WSA 10341 July 22, 2003; permits the City to provide up to 39,000 gpd to the Polo Fields Water District.

SOURCES

Water comes from three reservoirs and three wells. The water is collected from each source and is piped through two main transmission lines that merge just before entering the water treatment plant.

Reservoirs

The city relies on three reservoirs are a significant source of their water supply as shown in the following table:

CITY OF BEACON RESERVOIRS	
Name	Estimated Maximum Capacity
Mount Beacon	124 million gallons
Melzingah	38 million gallons
Cargill	152 million gallons

At the time of inspection, the previous 12 months have been a below average year for precipitation. Reservoir water levels were below normal for this season with only Mount Beacon and Cargill being able to provide water for the entire year to date but with levels below normal. The Melzingah Reservoir at the time of the inspection was about only 1/3 full and the operator was not withdrawing any more water from this reservoir until it has been replenished by precipitation.

The Mount Beacon Reservoir was not observed during this inspection. During the December 2018 inspection, The Mount Beacon dam was observed to be poorly maintained with visible leaks and the concrete surfaces showing widespread decay. The outlet valve is rusty and leaking. The road to the Mount Beacon reservoir is very rough but passable with a four-wheel drive vehicle. This road is also used by the crews servicing the communication tower on the mountain and it also serves a residence. When the Mount Beacon reservoir is used, water from the reservoir flows out of its single outlet valve into an open stream channel and down into the small Pocket reservoir. The Pocket Reservoir was inspected. According to your operator, the next capital improvement project for the system will be to repair the Pocket Reservoir dam to reduce leakage through the dam. An intake in the Pocket Reservoir feeds the water into a transmission main that merges into the Melzingah Reservoir transmission line. Because the water is not piped until the Pocket reservoir, the entire watershed supplying the Pocket Reservoir must be controlled. During storm events runoff into the Pocket Reservoir can be very turbid. The SCADA system has a turbidity monitor on the Pocket Reservoir. The SCADA system is programmed to automatically close the Pocket Reservoir intake valve if the Pocket Reservoir turbidity exceeds 4 NTU and then reopen it once the turbidity returns below 4 NTU.

The Melzingah Reservoir was inspected during this inspection. The Melzingah Reservoir has two intakes built into the dam. The dam needs minor maintenance of the concrete surface soon before significant maintenance will be required in the future. The gate on the Melzingah access road was locked and various boulders were positioned strategically to limit motor vehicle traffic to the reservoir. Your operators have made significant improvements to the Melzingah valve house which greatly improves the safety of your operators while in the building and maintains the valves in good condition so that they can be operated as needed. A transmission main runs the untreated water from the valve house to the water treatment plant.

The Cargill reservoir was inspected during this inspection. The reservoir dam was maintained free of brush but the concrete structures in the dam spillway needs some maintenance. The Cargill reservoir has two intakes that are used to draw water from different levels depending on the season. The water from the intakes flow to an open tank where the water is discharged into the Cargill storage tank through three gravity sprayers which reduces the water pressure from the reservoir. The tank discharges through a meter pit to a water transmission main that runs to the City of Beacon wellfield where it merges with the wellfield transmission main. The combined main runs from near the wellfield to the water treatment plant where it meets the Melzingah main and are combined into one feed line into the water treatment plant. The main from the reservoir to the wellfield is still mostly cast-iron pipe which is more prone to breakage. The City should plan on replacing the cast iron portions of the main as a capital project.

There appears to be an increase in use of the Mount Beacon and Melzingah reservoir areas by hikers, bikers, hunters, swimmers and fisherman. Some of the reservoir land is part of a marked trail system. Your operator has an ongoing program to replace the damaged no trespassing signs at the three reservoirs and improve signage generally. The gate on the road to the Mount Beacon reservoir is no longer kept locked. An agreement between the various parties legitimately using the road should be pursued so that the gate can be properly located and secured. The State Sanitary Code authorizes the City of Beacon to implement rules and regulations to protect the reservoir watersheds. Those regulations prohibit a variety of activities (including swimming) in and around the reservoirs. The Sanitary Code also appears to give Beacon the authority to enforce the watershed regulations. The code also requires that an annual report be submitted to the State Commissioner of Health by January 1. Reports may be sent to Dutchess County Department of Health. Your operators patrol the roads to the reservoirs and the dams. The entire watershed must be inspected yearly.

The NYS DEC inspects the reservoir dams biennially. You are also required under NYSDEC regulations to maintain the dams in safe condition and to retain a NYS licensed Professional Engineer to perform a complete engineering assessment of each dam every 10 years. Based on a prior assessment, you indicated that your engineer has submitted repair plans for the Mount Beacon dam and the Pocket Reservoir dam to NYSDEC for approval and are under review. If any portion of the dam repair designs impact the water intake structures, these plans will need to be approved by this department as well.

Wells

Wells 1 and 2 are located adjacent to the Fishkill Creek south of Route 84. The wells and equipment are located inside heated and lighted brick well houses with floors above the creek flood elevation. Well 1 is operating with a pump, motor, and Yaskawa VFD installed in 2012. At the time of the inspection Well 1 was running at 313 gpm with a water level of 131.1 feet. Your operator indicated that Well 2 has been temporarily removed from service due an apparent change in water quality where excessive sediment is entering the well. He believes that the excess sediment was the cause of the pump failure in September 2018. The City has retained an engineer who has submitted plans for a submersible well pump instead of the vertical turbine pump. Both wells are equipped with vertical turbine pumps, telemetry, blowoffs and sample taps. Each well is connected to the new system SCADA system which measures the well water level and flow rate from each well and sends the data to main SCADA system at the plant. The wells are connected by a main to Cargill Reservoir main. Wells 1 & 2 have an emergency generator (Caterpillar 3412 450 KW standby diesel powered) which insures continuous operation. Well 1 was listed at 530 feet deep. Your operator reports the actual depth is 215 feet, the pump is set at 200 feet, and that the maximum pumping rate is 400 gpm. Well 2 is reported to be 380 feet deep.

Well 8 in the Village of Fishkill well field was inspected along with RPZ valve. Well 8 appeared to be in good condition. Well 8 is plumbed to the Cargill Reservoir main and is connected to the main by a Reduced Pressure Zone (RPZ) valve to prevent cross connections. The RPZ valve was reportedly replaced by the Village during the winter of 2017-2018 when the heater unit in the building failed and the RPZ valve froze. The contract between the City and Village has been renegotiated to allow for up to 1 million gallons per day from the Village well.

All sources should be periodically evaluated to determine their capacity. Capacity studies were done in 1974 (Bowe, Walsh & Associates) and 1992 (O'Brien & Gere). A comprehensive water supply analysis and plan was prepared by LBG Hydrogeologic & Engineering Services, P.C. and released to the City in March 2018. The report included analysis of the three reservoirs and three wells and found that there is currently adequate capacity.

TREATMENT

The water plant on Liberty Street treats the water from the six sources. The plant can treat up to 4 Million Gallons per Day. Chlorine, aluminum sulfate (alum), and polymer (CYTEK Superfloc N-300 Polyacrylamide) are added to aid flocculation and coagulation just prior to a static in-line mixer. The polymer injector was repaired since our previous inspection. The water then passes into two solids contact basins which feed directly into three multi-media rapid sand filters (anthracite and sand, 2 million gallons per day (MGD) each). Zinc orthophosphate (ESC939) is added for corrosion control in the finished water line after the high lift pumps. Soda ash can be added if no wells are in use however the soda ash equipment has not been needed or used since 1985. All chemicals are NSF approved.

The filters are backwashed when head loss is 8 feet. This occurs after approximately 3 days of use in the summer and 4 days in the winter. The filter media was replaced with same materials as the original design during the summer of 2019.

The plant is operated based upon the levels in the storage tanks. The raw water flow from each source is manually adjusted by the operators. The three high lift pumps are controlled by the level in the clear well and the levels in the Fairview Tank. Pipes and appurtenances have been cleaned and repainted.

The plant has 5 continuous reading turbidimeters. One for the raw water, one for each filter effluent, and one for the plant finished water. The raw water turbidimeter is the oldest and is due to be updated. The feed pumps for the filtered water turbidimeters have been recently been repaired or replaced.

There are two chlorine gas chlorination systems. The backup automatically starts when the lead system runs out of chlorine. Chlorine is injected in two locations one prior to filtration and then again as the filtered water enters the clear wells. All chlorine equipment is on a preventative maintenance schedule. Output chlorine residual was 1.11 mg/l as measured by the Hach CL17 chlorine meter. The chlorinators are not flow paced. Instead they must be manually adjusted as the flows change. Chlorine residual is adjusted based upon distribution residuals. Raw water turbidity was 0.432 NTU. Finished water turbidity was 0.024 NTU.

All test equipment is calibrated on a regular basis.

The plant has a Detroit Diesel 92 turbo emergency generator, which is reported exercised monthly. Fuel reportedly lasts about six days per tank. The generator day tank was replaced in February 2020

STORAGE

Three finished water tanks provide finished water storage. The Fairview and Grandview (Howland Avenue) tanks supply the low distribution system.

CITY OF BEACON STORAGE TANKS					
Name	Approval Date	Volume	Base elevation (ft)	Height (ft)	Diameter (ft)
Howland/Grandview	November 9, 1993 – Erected in 1994	1.15 MG	310	42	70
Mount Beacon	Modified August 24, 1990	1 MG	386	35	70
Fairview (current)	Replacement Approved 2018 - Erected 2019	1.5 MG	320	33	90

The Fairview tank is a 1.5-million-gallon glass coated steel tank installed in 2019. This tank is the replacement for the old 1-million-gallon storage tank that was in extremely poor condition. The new tank incorporates separate inlet and outlets and a Solar mix Bee mixer unit. The tank is enclosed in a new chain link fence around the entire perimeter.

The Howland/Grandview tank has a few exterior rust spots. The surface should be maintained before widespread rust occurs. The tank also has some graffiti indicating that it is not protected from vandalism. The screen at the end of the overflow pipe was repaired since the 2018 inspection. The 2015 tank inspection report has a list of recommended maintenance and repairs.

The Mount Beacon (Pocket) tank supplies the high-pressure zone. Normal level for this tank is 26 to 30 feet. When full, the level is 35 feet. When the level drops below 21 feet, some homes in the high-pressure zone experience low pressure. In an emergency, the operator indicates that the Mount Beacon tank can feed the low-pressure zone. The Mount Beacon tank has widespread rust spots which indicate that the surface needs recoating. Some caulk is missing from the contact of the tank surface with the concrete base and needs to be repaired. Additionally, the tank is covered with significant amounts of graffiti which indicate that the tank is not secure from vandalism.

We recommend that water storage tanks be inspected every 5 to 10 years. We have received a copy of 2015 inspection for Howland/Grandview tank and a copy of 2020 inspection the new Fairview tank. We need to receive the inspection report for the Mount Beacon tank report.

Each of the tanks has telemetry that provide the plant SCADA system with water level information.

DISTRIBUTION

The distribution system has 4 pressure zones. Most of the system is maintained by the Fairview and Howland tanks in the normal pressure zone. There are two independent high-pressure zones which are pressurized by two pump stations in the distribution system. There is low pressure zone in the area by the Hudson River which is controlled a pressure reducing valve. The following describes the two pump stations:

The East Main station pressurizes the main high-pressure zone of the city. The underground pump station used to be manually controlled but it is now tied the SCADA system. The SCADA system runs the pumps to maintain water levels of the Mount Beacon tank within a set range. One of the pumps has been replaced; the other is due for replacement. The pump station SCADA upgrades included installing a new electrical transfer switch and new generator connection in case of power outages. The SCADA upgrade also included installing a high-water alarm in case a major leak and/or sump pump failure.

The above grade Glendale pump station on Helen Court supplies about 25 residences. Two 7.5 HP pumps pressurize a hydropneumatic tank. A compressor adds air as necessary to the tank. A spare compressor is present. Telemetry (a low-pressure alarm) is being installed. The phone

line and pressure switch are installed. A new auto dialer has been installed. Oil for the air compressors must be NSF approved or food grade. The 20KW Kohler 20RZ natural gas-powered generator can power one of the pumps. A manual transfer switch is provided.

The low-pressure area is located down near the Hudson River. Ross pressure reducing valves (8" 40WR and 2") are located in a pit reduce the pressure for the Long Dock area. The valve was rebuilt in 2019.

Your operators report that flushing is done yearly. Residents are notified by newspaper of areas being flushed. Valves are exercised and hydrants tested. Records of testing are kept. A special vacuum machine for cleaning valve boxes is mounted on a truck and used during the valve exercising.

GIS recording of distribution system components has been completed, maps have been provided to the water department.

SAMPLING

Sodium and chloride samples are due quarterly. LT2 samples were completed in 2009. You are in Bin 4, with no further treatment is required. A surveillance bacteriological sample was taken the day of the inspection. The results met the Code requirements and is attached to this report.

The Town of Fishkill authorized the City to maintain the Polo Fields water district on February 11, 2008. That district has been incorporated into your distribution system sampling plans.

CROSS-CONNECTION CONTROL

The Cross-Connection Control Program is the responsibility of the designated operator. Failure to have testable backflow units tested and certified annually may result in violations.

The final version of your revised Cross Connection Control Program Local Law is available on the City website. The law codifies the program and includes enforcement mechanisms for the city to use if needed. The City needs to continue to improve its implementation of the law including an accurate accounting of all cross-connection control devices in the City Water System and tracking of annual testing of all devices. Currently the tracking system is rudimentary and significant effort needs to be made to identify all the devices in the district.

MANAGEMENT

The plant is kept clean and generally in good repair. Pipes are properly labeled and color coded. There are currently three operators, Matt Fezza (Grade 1A), Bobby O'Keeffe (Grade IIA), and Andrew Stevens (Grade D). Mr. Fezza is the designated operator in charge. Careful attention must be paid to ensuring that adequately trained staff are available at all times. Per 5-4 of the Sanitary Code, your plant requires a grade IA operator, a grade IIA assistant operator and a grade D distribution operator. Coverage for vacations, emergencies, and other leave time must be provided.

Automated monitoring equipment for chlorine residual and turbidity provide the operator with detailed process information. The plant also has an in-house laboratory to monitor water quality into and out of the plant.

The system has made efforts to maintain and /or improve existing facilities such as the replacement of the Fairview Tank, replacement of the filter media and repairs to the Melzingah valve building. Continued efforts to maintain existing facilities will result in lower capital expenditures in the long term and reliable operation of the system for its customers.

Your 2018 annual water quality report (AWQR) was received and accepted. It is publicly available on the City website along with copies from previous years and was mailed to customers with their water bills.

According to the NYS Sanitary Code Part 5: "All community water systems must deliver a copy of the report, to its bill-paying customers and make good faith efforts to reach customers who do not get water bills on or before May 31st of each year".

EMERGENCY AND SECURITY

The plant, wells, and Glendale pump station have emergency generators in case of power failures. There is emergency transfer switch and generator at the East Main Street pump station and you have indicated that Most equipment or facilities are fenced and locked. The storage tanks should be fully enclosed in security fence with locked gates.

The new water system SCADA system is connected to outside networks. You should continually work with your SCADA provider and IT group to protect your SCADA system from external threats through regular software updates, maintain the most current virus and malware software and by practicing safe internet access practices.

Your emergency plan should be updated regularly. New York State requires that updates be sent to the health department every 5 years. A revised plan was prepared in 2013 and an updated revised plan was due by December 2018 and is now almost 2 years late. Additionally, you must update the personnel section (and phone numbers) as needed. An updated copy of the emergency plan and a copy of the vulnerability assessment must be delivered to our department as soon as possible.

REQUIRED WORK

- Update the system emergency plan and vulnerability assessment and submit to this department for review as soon as possible.
- Inspections of the Mt. Beacon storage tanks.
- Repair Well #2.
- Install fencing around the water tanks to limit access.
- Repaint the Mount Beacon tank and repair the base caulking.
- Fully implement the cross-connection control program.
- Maintain reservoir dams in good condition.

CLOSING

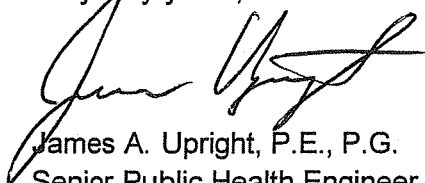
Continue to keep all equipment, areas, and pipes clean and properly labeled. Ensure that a designated operator is available for the plant. Please also submit any corrections for items in this report.

A revised version of your sampling schedule is attached to this report. The schedule does not include specific locations or process control sampling. It is still your responsibility to determine your sampling requirements under the applicable state and federal codes.

Your cooperation in complying with the New York State Sanitary Code is appreciated. Failure to comply will lead to administrative action, including fines.

If you have any questions, please call me at (845) 486-3404.

Very truly yours,



James A. Upright, P.E., P.G.
Senior Public Health Engineer
Environmental Health Services

Attachments

cc: Matt Fezza, Operator
Ozzy Albra, Supervisor, Town of Fishkill
File

ANALYTICAL REPORT

Job Number: 420-183675-1

SDG Number: Beacon City PWS:NY1302760

Job Description: DCDH - Poughkeepsie Office 2020

For:

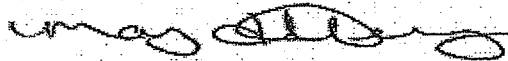
Dutchess County Health Department

85 Civic Center Plaza

Suite 106

Poughkeepsie, NY 12601

Attention: DCDH Reports



Designee for

Meredith W Ruthven

Customer Service Manager

mruthven@envirotestlaboratories.com

10/29/2020

NYSDOH ELAP does not certify for all parameters. EnviroTest Laboratories does hold certification for all analytes where certification is offered by ELAP unless otherwise specified in the Certification Information section of this report Pursuant to NELAP, this report may not be reproduced, except in full, without written approval of the laboratory. EnviroTest Laboratories Inc. certifies that the analytical results contained herein apply only to the samples tested as received by our laboratory. All questions regarding this report should be directed to the EnviroTest Customer Service Representative.

EnviroTest Laboratories, Inc. Certifications and Approvals: NYSDOH 10142, NJDEP NY015, CTDOHPH-0554

Envirotest Laboratories

315 Fullerton Avenue, Newburgh, NY 12550

Tel (845) 562-0890 Fax (845) 562-0841 www.envirotestlaboratories.com

DCDH Reports
 Dutchess County Health Department
 85 Civic Center Plaza
 Suite 106
 Poughkeepsie, NY 12601

Job Number: 420-183675-1
 Lab Sample Id: 420-183675-1
 Client Matrix: Drinking Water
 Date Sampled: 10/21/2020 1340
 Date Received: 10/22/2020 1600
 % Moisture:

Client Sample ID: BDO

Result/Qualifier	Unit	RL	MDL	Method	Date Prepared	Date Analyzed	Dilution
------------------	------	----	-----	--------	---------------	---------------	----------

BIOLOGY

Coliform, Total
 Escherichia coli

Absent	CFU/100			SM 9223		10/22/2020 1635	1.0
Absent	CFU/100			SM 9223		10/22/2020 1635	1.0



**EnviroTest
Laboratories, LLC**

CHAIN OF CUSTODY

315 Fullerton Avenue
Newburgh, NY 12560
TEL (845) 562-0860
FAX (845) 562-0841

CUSTOMER DCDOH
 ADDRESS 85 Civic Center Plaza, Suite 106
 CITY/STATE/ ZIP Poughkeepsie, NY 12601
 CONTACT J. W. [Signature] PHONE
 PROJECT LOCATION BEACON CITY
 PRJ NUMBER/P.O.# PWS:NY1302760

MATRIX: DW=DRINKING WATER S=SOIL O=OIL WW=WASTE WATER
 SL=SLUDGE GW=GROUND WATER

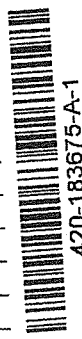
REPORT TYPE
 STANDARD ISRA
 NJ REG A B
 NYASP OTHER

TURNAROUND
 NORMAL
 QUICK
 VERBAL

REPORT # (Lab Use Only)
 83675

NY PUBLIC WATER SUPPLIES
 SOURCE ID
 ELRP TYPE
 FEDERAL ID NY1302760
 ANALYSIS REQUESTED
 Coliform, Total

40ml Glass HCL	1	250ml Plastic H2SO4		250ml Plastic HNO3		250ml Plastic NaOH		1 Liter Plastic		1 Liter Plastic H2SO4		125ml Plastic Sterile		125ml Plastic Sterile w/Thio		250ml Pl. NaOH/ZnAcetate	
----------------	---	---------------------	--	--------------------	--	--------------------	--	-----------------	--	-----------------------	--	-----------------------	--	------------------------------	--	--------------------------	--



420-183675-A-1

BDO
 Date Sampled: 10/21/2020 420-1570960

Sample #	DATE	TIME	COMP (Y/N)	GRAB (Y/N)	MATRIX	Client I.D.
10/21	1:40		N	Y	DW	BDO

SAMPLES SUBMITTED FOR ANALYSIS WILL BE SUBJECT TO THE ENVIROTEST TERMS AND CONDITIONS OF SALE (SHORT FORM) UNLESS ALTERNATE TERMS ARE AGREED IN WRITING.

REQUISITIONED BY DCDOH	DATE 2020-10-21	TIME 1:40	COMPANY DCDOH	RECEIVED BY MMD	DATE 10/22/20	TIME 1:00	COMPANY FRZ
DELIVERED BY BDO	DATE 2020-10-21	TIME 1:40	COMPANY BDO	RECEIVED BY Ked [Signature]	DATE 10/22/20	TIME 1:55	COMPANY ETL

COMMENTS
 Free Chlorine Residual = mg/l 1.8
 Requisitioned by MMD 10-22-20 15:45
 BDO Kitchen Sink Breakroom