



The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner



February 22, 2021

Board of Commissioners
Conway Village Fire District
128 W Main Street
Conway NH 03818
via email: sbamsey@cvillagefd.com

Subject: Conway Village Fire District, PWS 0511010
Sanitary Survey 2020

Dear Members of the Board:

On November 5, 2020, NHDES performed a sanitary survey on the Conway Village Fire District (CVFD) drinking water system. The purpose of the survey is to review the capacity of the system's source, treatment, distribution and management to continuously produce safe drinking water. I would like to thank Adam LePrevost, superintendent, and Steve Anderson, primary operator, for their assistance in completing this survey.

SUMMARY

The CVFD is operated in a professional manner and the operators are knowledgeable of the system and its components. The most recent water quality monitoring records show that the system is currently in compliance with water quality standards including lead and copper.

This survey did not identify any significant deficiencies. However, the following is a list of issues that we recommend the managers of the water system consider to maintain compliance, and continue to provide an acceptable level of service to the system's customers:

1. Continue to use and update your Asset Management Program (AMP) to achieve and maintain the desired level of service at the lowest appropriate cost to customers.
2. Complete the 2014 recommended upgrades of the chemical treatment station, including the installation of a chlorine analyzer to continuously monitor levels entering distribution.
3. Prepare for the pending regulations of the Lead and Copper Rule Revisions (LCRR).
4. Eliminate regular entry into the confined space and provide safer access for operators to obtain samples at GPW 1.

A more descriptive discussion on each of these issues is included below under "Recommendations".

SYSTEM DESCRIPTION

General

The CVFD system serves a population of approximately 2,665 people through 930 service connections, including 10 connections in the Towns of Albany and Madison. The system continues to grow with developments currently or soon to be under construction. The reported annual average daily use is approximately 250,000 gallons per day (gpd).

The CVFD consists of two gravel packed wells (GPWs), a chemical treatment building, three storage tanks, and a distribution piping network consisting of approximately 19 miles of pipe and an emergency interconnection with the North Conway Village District.

Water Sources

CVFD's wells are summarized as follows:

Well	DES No.	Well Depth (feet)	Nominal well capacity (gpm)	Current pump rate (gpm)	Installation Date
GPW 1	001	78	750	800	1955
GPW 2	002	90	500	600	1966

The GPW 1 station is a two-story brick building. The first floor contains a 75 HP vertical turbine pump and motor, flow recorders and totalizer. Reports indicate that in 2002 a new bowl assembly, line shaft, and column pipe was installed in the well. The lower level houses the distribution piping, valves, and raw water tap. Access to the lower level is via a covered opening in the floor and a vertical ladder.

The GPW 2 station is a single-story brick building. The building contains a 50 HP vertical pump and motor and at grade piping and valving. GPW 2 was reportedly rehabbed in 2018 completed which included a new station heater and painting the existing piping.

GPW 1 and GPW 2 are both located off of the Kancamagus Highway (Rte. 112) with well houses and a single treatment building all enclosed within a chain link fence.

Treatment

The treatment building was upgraded in 2018 and houses a chemical feed system, SCADA controls, and other instrumentation. The chemical feed system consists of bulk and day storage for sodium hypochlorite (NaOCl) and sodium hydroxide (NaOH), and chemical feed pumps. NaOCl is transferred by electronic hand pump from delivered drums into a day tank. The target chlorine residual in the village area is 0.2 - 0.3 mg/L. Chemical injections are housed in below ground manholes located outside of the chemical treatment building.

Chemical systems are summarized as follows:

Chemical	Purpose	Bulk Delivery / Storage	Day Tanks
NaOH	pH adjustment / corrosion control	2 x 1,100 gallon poly tanks	200 gal
NaOCl	Disinfection	55 gal drums	120 gal

Chemical feed for both chemicals is set at a dosage based on the capacity of the well pumps and is not flow paced.

Pumps, Pumping Facilities, and Controls

A propane powered generator with auto transfer supplies sufficient power for all wells and treatment equipment. The generator is tested weekly on no load.

Recent treatment station upgrades included a supervisory control and data acquisition (SCADA) system with alarm notification. The SCADA system is a shared system with sewer and collects data via radio signals from the storage tanks, provides information to a viewer at the office location and a tablet viewer, and provides alarm notification via cell phone to operators. Operators can view the system on the viewers but must go to station for any alarms. Alarms include high and low (water storage) tank, low and high flow, intrusion, and low station temperature. A pressure transducer at the storage tanks transmits level signals and typical tank levels fluctuate between 26 and 32 feet.

Finished Water Storage

Treated water from the wells flows directly into the distribution system. Water not utilized by the users is discharged into two storage tanks located along Bald Hill Road. The storage tanks are summarized as follows:

Storage Tank	Tank Construction	Capacity (gal)	Year Built	Last Inspected
Bald Hill Road North	Glass lined steel	559,000	1995	2020
Bald Hill Road South	Pre-stressed Concrete	265,000	2014	2020

The last tank inspections recommended new anodes on the Aquastore tank and power wash and touchup paint for the concrete tank. According to the operator, these maintenance items are budgeted for 2021.

Distribution

The distribution system is comprised primarily of four to twelve-inch diameter pipe. Type of pipe material includes ductile iron, cast iron, PVC, asbestos, and HDPE. The interconnection with North Conway consists of an underground vault with a meter and pressure sustaining valve which will allow water to flow from North Conway to CVFD. Water from CVFD to North Conway must use a hook up with a fire pumper and interconnect hydrants on either side of the vault. This interconnection was recently installed to improve pressure in the Cranmore shores, Conway Heights, and Lamplighter's development area, and has also provided service in the past when there was construction on the Saco bridge crossing. The interconnection is designed to provide flow when pressure drops below 60 psi. An estimated 20,000 gallons was metered 2019.

The system has decreased flushing to once per year recently, but plans to transition back to twice per year post-COVID. Valve exercising is performed annually, with a goal of reaching all valves every other year.

All service connections are metered with back flow devices. The District has an active cross connection control program and submits annual test results to DES for review. The CVFD is up to date on reporting the results of all testable backflow devices. Two-thirds of the testing is contracted and one-third performed in house.

Monitoring, Reporting, and Data Verification

Water quality monitoring records show that the system is in compliance with current standards including lead and copper. The EPA is expected to announce new lead and copper rules this year and new regulatory levels for arsenic and manganese will be enforced in 2021. CVFD should become familiar with these new and upcoming regulations and determine impact.

Water System Management and Operation

The CVFD worked with the DES Water Conservation Section to develop a water conservation plan which requires ongoing compliance with the water conservation regulations.

In addition, the District implemented an AMP in 2014 which includes mapping, inventory condition and risk assessment of major assets, and water rate projections.

Staffing and Operator Certification

The CVFD is required to retain an operator certified at the grade 1 treatment and grade 2 distribution level. The following active certified operators are listed:

Operator	Certificate No.	Treatment Level	Distribution Level
Steven Anderson	3175	1	2
Bruno Valliares	2869	1	3

Sloan Rogers has recently passed the exam to be certified in the State of New Hampshire.

ACKNOWLEDGEMENTS

1. We commend the CVFD for developing an AMP to maintain a plan to stay on top of critical improvement needs.
2. New management at the CVFD has developed a good communication with DES. This should provide CVFD with up to date information and the tools to maintain a well operated system.

RECOMMENDATIONS

Below are areas where improvements or operating adjustments are recommended, some of which could lead to significant deficiencies in the future if not addressed:

Water System Management and Operation

1. NHDES commends initiating an AMP to help you get the most value from each of your assets and have the financial resources to rehabilitate and replace them when necessary. This program is not a one-time action item, but a living program that needs continual upkeep and oversight. Asset management helps a system make critical decisions about how to achieve and maintain the desired level of service at the lowest appropriate cost to customers. Feel free to contact Luis Adorno at Luis.Adorno@des.nh.gov or 271-2472 at any time for support with your Asset Management program.

Treatment

2. An evaluation of the well pumps and chemical storage and feed facility prepared in 2014 provided several recommendations for upgrades. However, some recommendations remain to be completed. We suggest incorporated the work into your AMP and plan to accomplish the recommendations over the next several years. Of top priority for DES is the installation of continuous monitoring of chlorine and connection to the SCADA system.

Monitoring, Reporting, and Data Verification

3. The LCRR will require an inventory of all services on both the public and private side of the curb stop, we expect by January 2024. We recommend that the CVFD initiate a program to identify materials off record drawings, tie cards, and/or when at the entrance of private services for meter replacements.

Pumps, Pumping Facilities, and Controls

4. The lower level of GPW 1 houses the distribution piping, valves, and raw water tap. Access to the lower level is via a covered opening in the floor and a vertical ladder. This is considered a confined space entry and should be eliminated. At a minimum we suggest installing piping to transport water for sampling to the ground level to avoid regular entry into the confined space.

If you have any questions please contact me at Randal.A.Suozzo@des.nh.gov or 271-1746.

Sincerely,



Randal A. Suozzo, P.E.
Drinking Water and Groundwater Bureau

cc: Adam LePrevost, Superintendent
Steve Anderson, Primary Operator