



The State of New Hampshire
Department of Environmental Services



Thomas S. Burack, Commissioner

September 24, 2014

Elizabeth Dragon, City Manager
316 Central Street
Franklin NH 03235

Subject: MWS Franklin Water Department (0851010)
Sanitary Survey 12/10/2013

Dear Ms. Dragon:

This report summarizes information collected by the DES Drinking Water and Groundwater Bureau (DWGB) in a sanitary survey of the City of Franklin Water Department water system on December 10, 2013. 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 Brian Sullivan, Director of Municipal Services, and George Turcotte, Deputy Director of Municipal Services, for their assistance in completing the survey

SUMMARY

Water system staff interviewed as part of this survey were very knowledgeable about the water system and approach their jobs in a professional manner. Water quality monitoring records show that the system is in compliance with current standards including compliance with bacterial standards, and action levels for lead and copper. This sanitary survey did not identify any significant deficiencies.

The City has completed major improvements to the water systems since the previous sanitary survey including construction of a new water treatment plant, replacement of two water tanks, completion of several large water main replacement projects, and development of a Capital Efficiency Plan. We commend the City for these significant achievements.

We recommend that the managers of the water system consider the following:

- The City should continue to explore options for interconnecting with the Tilton-Northfield water system.
- As recommended in the previous sanitary survey, the City should consider improving access to the vaults at the Acme wells, and the Pleasant Street booster station.

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

FACILITIES SUMMARY

The Franklin water system serves a population of about 7000 people through 2,314 service connections. Average daily water demand was approximately 560,000 gallons per day (gpd) in 2012. Total well capacity of three wells and one point well field at current pumping rates is about 1500 gpm. There are three major pressure



zones and five storage tanks providing a total storage capacity of 3.2 million gallons (mg). All of the wells and booster station are equipped with backup power.

Sources and Treatment

Franklin’s wells are summarized as follows:

Well	DES No.	Nominal well capacity (gpm)	Current pump rate (gpm)	Treatment
Acme 1 and 2	001, 002	1,400	700	Cl ₂ , Greensand Plus, phosphate ⁽¹⁾ , soda ash
Sanbornton	003	500	500	Cl ₂ , soda ash
Franklin Falls	004	1,000	300	Cl ₂ , Greensand Plus, phosphate ⁽¹⁾ , soda ash

(1) phosphate = hexametaphosphate/polyphosphate blend, for corrosion control

The Acme and the Franklin Falls wells pump to a new treatment plant that was placed in service in 2012. This plant provides oxidation/filtration of iron and manganese, disinfection and corrosion control. Treated water is pumped both to North Main Street via an upgraded discharge main and to the east side of Franklin via a new discharge main below the Pemigewasset River.

The Sanbornton well field consists of a network of 50 active manifolded point wells which are pumped on a rotating basis. The point wells are of variable depth up to 50 feet, and were initially installed in 1949. A vacuum system in the central pumping and treatment building draws water from the point wells under 10 psi vacuum to a central tank. Water is then pumped into distribution via dual split case centrifugal high lift pumps. This station has seen electrical upgrades, installation of backup power and soft-start high lift drives. The well field has been cleared of woody vegetation. A portion of the well points are tested each year, and old well screens are replaced with stainless screens as necessary.

All of the well sources pump into the lowest of the three pressure zones, and can be controlled through level controls at the North Main tank, Salisbury Road tank, or the Pleasant Street reservoir. Pump cycles of active wells are currently controlled through SCADA based on the level of the Pleasant Street Reservoir. Alarms are sent to duty operators via pager.

Distribution System

The Franklin distribution network has three pressure zones summarized as follows:

Zone	Pump Station	Storage Tank	Tank Construction	Overflow Elevation	Capacity (mg)
Low	3 well sources	North Main	Pre-stressed concrete	556.5	0.5
		Salisbury Rd.	Pre-stressed concrete	556.5	0.5
		Pleasant St. Res.	Pre-stressed concrete	556.5	0.7
High	Pleasant St. booster	Pleasant St. 1 MG	Welded Steel	845	1.0
Third	Babbitt Rd. PS	Cross St.	Welded Steel	660	0.5

Service pressures are generally above the required minimum of 35 psi. Areas of below-standard pressure have been addressed through main replacement, including the recent Hill Road water main upgrade. There are also

some areas in which insufficient pressure has historically been addressed through individual residential boosters, although individual boosters are not allowed under state design regulations. To prevent this from occurring in the future, the planning board has established a maximum service elevation that defines the limits of water service from the municipal system. High service line pressure at the lower end of pressure zones is addressed through PRVs on individual services.

The Cross Street 0.5 MG tank contains about 50% useable storage due to residential service connections in the area of the tank. The City considered relocating this tank to higher ground to improve pressures and fire flow in this zone, but decided to keep the tank at its current location. The tank had a small leak at the time of the survey, and is in need of rehabilitation. The City plans to use DWSRF funds to rehabilitate the tank in the spring of 2015.

The City has adopted a schedule for inspection and maintenance of storage tanks. All tanks have had internal inspections within the past 5 years. Pump stations are maintained in clean condition and are well maintained. Distribution mains are flushed twice annually using a directional flushing plan, which is reported to be very effective. Valve exercising is performed at the same time. Aggressive leak detection and water accounting have significantly reduced unaccounted-for water losses from an estimated 40 percent in the mid-1990s to the current estimate of less than 15 percent. The City is nearing completion of a project that will convert all of the former touch-pad type meters to the radio-read type. A balance of 435 water meters out of a total of 2314 meters remain to be converted.

The City has contracted for citywide cross connection survey services, and has reviewed cross connection hazards at over 140 properties. Testable backflow devices are tested at required intervals by contractors, with certification of testing sent to the city.

The City has put in place service contracts for its SCADA system, HVAC systems, computers, and the water treatment plant filtration system.

STAFFING AND CERTIFIED OPERATOR VERIFICATION

The city is required to retain a primary certified operator certified at treatment grade 2 and distribution grade 2. The following are certified operators according to our files:

<u>Operator</u>	<u>Certificate No.</u>	<u>Treatment Level</u>	<u>Distribution Level</u>
George Turcotte Jr.	1310	2	2
Gerard Parent	1304	-	1
Leo Leifester	3254	2	1
Kenneth Kreis Jr.	2477	1	2
Bryan Donisi	3237	1	1
Brian Sullivan	2415	1	1

ACKNOWLEDGEMENTS

The Franklin water system has been improved significantly in recent years, including the following large capital projects:

1. Construction of the new water treatment plant at the Acme well filed in 2012, which addressed long-standing concerns about aesthetic water quality due to high iron and manganese. An air-scour system

was added at the filtration plant in 2013 to provide more thorough backwashing, and to reduce backwash time and volume.

2. Completion of significant improvements to the distribution system and firefighting capability by replacing aging mains, including mains connecting the Acme treatment plant to the east and west portions of the distribution system, and the North Main Street Tank to downtown Franklin.
3. Replacement of the 500,000 gallon tanks on Salisbury Road and North Main Street, including new buildings to house valves and instrumentation.
4. Construction of a new maintenance garage on Tannery Street, which will provide much-needed space for water and sewer crews.

In addition to the above, Franklin has undertaken a comprehensive capital efficiency plan that covers all of the City's public works infrastructure, including the water system. This effort includes ongoing GIS mapping and inventorying of water system assets. At the time of the survey, all hydrants, gate valves, and 80 percent of the curb stops had been mapped. Tie cards are also being converted to electronic format. An updated water system hydraulic model is also being developed.

RECOMMENDATIONS

1. The Tilton-Northfield Water District has expressed interest in establishing an interconnection with the City of Franklin water system, and the City has explored the feasibility of constructing an interconnection between the two systems. While the preliminary studies completed by the City indicate that the interconnection would require a significant capital investment, we recommend that the City continue to work with Tilton-Northfield to explore interconnection options.
2. The previous sanitary survey noted that most of the water system's facilities are above-grade and provide safe access to the operators. The Acme wells and the Pleasant Street booster, however, are below-grade and must be accessed by ladder. We encourage the city to review access to these facilities and consider access improvement in its capital planning.

I can be reached at 271-2953 or Daniel.Dudley@des.nh.gov if there are any questions regarding this letter.

Sincerely,



Daniel Dudley, P.E.
Water Supply Engineering Bureau

cc. Brian Sullivan, Director of Municipal Services
George Turcotte, Jr., Deputy Director of Municipal Services