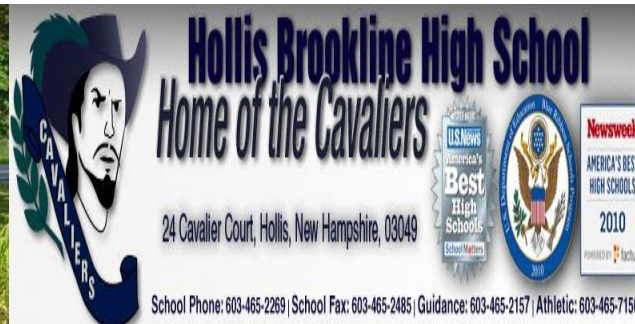


Hollis Water Update Rev A

December 5, 2011



Background

◆ Sampling

- Rocky Pond pump station (EPA 117530) experienced several coliform and two *E. Coli* bacteria hits at HBMS (10/7/2011)
- *E.Coli* hits occurred in the HBMS Kitchen sink and Nurse's Office sink
- Immediate re-sampling (10/8/2011) resulted in negative *E.Coli* however the HPS and HUES kitchen had positive total coliform.
- Sampling at the well (10/8/2011) showed a clean source (absent of all bacteria)

◆ Boil Water Order

- Received October 7, 2011 from DES
- Issued due to positive test results for fecal coliform/*E. coli* bacteria
- HUES, HPS, various town buildings, and private residences served by the Rocky Pond Pump Station affected

Background cont.

◆ Corrective Steps

- Installed a chlorinator at the well head (10/7/2011) but did not activate per DES direction
- Received direction from DES on 10/10/11 to “Shock” the system with 10ppm CL solution in distribution piping (source did not require shock as test results were clean)
- Due to system and dosing size it was determined that chlorinator equipment would have difficulty supporting such a high dose of CL
 - Adjusted the chlorination approach to a continuous dosing of 1-2ppm to achieve adequate contact of the distribution system; executed 10/11/2011
- Temporary CL injection was stopped on 10/13/2011 to allow for natural evacuation of CL over the weekend.
- Follow-up tested on 10/17/2011 revealed the following:
 - Town Hall – CLEAN
 - HBMS – 3 counts coliform present
 - HUES – 3 counts coliform present
 - No sites tested positive for *E.coli*

DES Meeting

◆ DES meeting 10/19/2011

- Participants: Jen Mates, DES; Scott Boggis and Shawn Greenway, Skillings & Sons; Susan Hodgdon, Dr. Betsey Cox, Eric Horton, Chris Siegfried, John Grey, SAU-41
- Discussed steps taken to date and potential sources and remedies for contamination of the water system

◆ Corrective Action

- Meeting on 10/19/2011 resulted in the following corrective steps approved by DES
 - DES approved the use of temporary chlorination of the water system for a period not to exceed 30 days
 - District to investigate the possible causes of the bacteria contamination with the assistance of a private consultant
 - Attain a private consultant to present a summary of findings
 - Consultant report should detail the corrective actions needed for any deficiency identified and a timeline for completing such repairs.

Lifting of Boil Order

◆ Order lifted on 11/17/2011

- Two consecutive tests taken on 11/8/2011 and 11/16/2011 were clean
- Boil order subsequently lifted per DES direction with the following conditions:
 - Continue investigation of e.coli source (possible leak).
 - Chlorination will be continued while the leak detection/repair is pursued. – **In process**
 - Submit technical specifications of chlorination system for approval for permanent use. This should also include the location of injection point relative to the source sample tap (pressure tank) and corrosion control system. (If the schools wants to discontinue the chlorination once the leak investigation/repair is complete, that is an option we would consider in the future.) – **Complete, 11/30/2011**
 - Begin Investigate Monitoring (IM), which requires 6 consecutive months of e.coli sampling from the well – **In process (source samples)**
 - Begin routine testing for disinfection by-products (DBPs), which include HAA5 and TTHM. The first sample will be required in the first quarter 2012. If they are below the limit, the samples are required every 3 years. If not, this will be an annual sample.

Planned Activities

◆ Corrective Steps

- Proposed actions were submitted (11/25/2011) and approved by DES (11/29/2011)
- Next corrective action milestone with DES is 1/15/2012
- Under the guidance of a consultant, Don Provencher, the following is in process:
 - Complete a meter reading and distribution flow/pressure assessment
 - Review previously recorded data, redeploy the data logger at the well (complete 11/25/2011), analyze readings and present in a graph format
 - Perform pressure test between HBMS and Proctor Hill Rd, Rocky Pond pump house and Proctor Hill Rd, and Rocky Pond pump house and HPS – **Complete 12/3/2011** (results detailed on slide 7)
 - Pressure testing to be completed by Underground Testing & Services, LLC (UTS)
 - Test set-up and requirements reviewed on 11/23/2011; UTS, Skillings & Sons, Provencher Engineering and Chris Siegfried were present
 - Complete pressure test of HBMS plumbing system - **Complete 12/3/2011**
 - Pressure test is tentatively scheduled for Saturday - **Complete 12/3/2011**

Waterline Pressure Test

◆ Test Summary

- An approximate 1.5 GPM leak exists somewhere between the Rocky Pond pump station and Proctor Hill Road, roughly a 2,100-foot distance. This is approximately 2,200 gal/day.
- There is NO LEAK in water line between Proctor Hill Road and the Middle School.
- The water line around and in the Middle school is not leaking.
- We tested the north water line (pump house to Primary school pump station), but it was inconclusive because the pressure dropped. Initial investigation identified an faulty (frozen) valve in the Primary School pump station.

Waterline Pressure Test

◆ Next Steps

- Install another valve in the line in Rocky Pond Road to divide and test the 2,100-foot segment in separate segments.
 - Re-pressure test Rocky Pond Rd after valve is installed (should be minimal to no loss in service to re-test). This would allow further refinement of which segment the leak is in.
 - Continue with a an additional valve install or perform a sonic leak detection until a feasible length is identified for replacement.
- Install new valve in Primary School pump station and re-pressure test north branch between Rocky Pond pump station and Primary School pump station.
- Identify the services of a backflow surveyors and request proposals to review buildings.
- Review water readings obtained from data logger

Chlorinator Specifications

- The chlorinator at the Rocky Pond Pump House is a LMI model AA941-D5HI Ser# 11093240377-3
- The pump is a .58 GPH pump with auto prime valve and 50 gallon crock
- The chlorine is diluted to a 5 to 1 ratio of 12.5% CL with a stroke length of 50%
- This set up will target a 1PPM in the distribution system.
- The pump has pace on flow capabilities through the 4-20 MA signal provided by the onsite Badger Flow meter. The pump has been scaled 4MA = zero flow and 20 MA = 100gpm flow