

INFORMATION REGARDING WATER QUALITY

Another successful year has passed with the Dr. William E. Boyle Water Treatment Facility performing beyond expectations in all areas including operation of equipment and quality of water produced. It is a pleasure to be able to do the monthly compliance sampling and not have to be concerned about additional sampling or notification due to Coliform hits. We continue to see high quality water throughout the distribution system as demonstrated by our monthly sampling and analysis. The turbidity, as measured leaving the facility, was less than 0.04 mg/L on average for the year. The average turbidity in the distribution system was less than 0.40 mg/L. The difference is a result of tuberculation in the unlined pipes and sediments that have accumulated over many years of supplying unfiltered water. The continued spring and fall flushing of the distribution system and replacement of the older sections of pipe will over time help to remove these sediments and improve the water quality.

This past spring HWWCo completed another round of lead and copper sampling, and I am pleased to report the results indicated more than 90% of the samples were within the federal action limits. This would indicate the current corrosion control techniques are working and the lead and copper leaching is being minimized. Because this was the second consecutive round to be within the 90th percentile the frequency of the sampling has been reduced to once per year and the number of required samples has also been reduced to 20 from 40. This is a significant savings to HWWCo in sampling and labor costs but, more importantly, indicates the treatment techniques are providing the consumer with a safer product.

The new filtration facility and its proven performance have sparked an interest in substituting tap water for bottle water. As more and more is learned about the adverse effects of bottles and bottled water, it makes sense to give the Hanover water a try. There is some real monetary benefit as well as indicated in the calculations below.

Current rate for water = \$2.552 per 100 cubic feet. 1 cubic foot of water = 7.5 gals. Then 100 cubic feet (cf) = 750 gallons; \$2.552 / 750 gals = \$0.003/gallon or 293 gallons for \$1.00

This is a strong argument to use tap water rather than bottled water. Look for future reusable bottle programs through local vendors. We at the HWWCo feel you will be delightfully surprised at the fresh clean taste and the sparkle of the water.

TURBIDITY DOCUMENT

Turbidity is a measure of the cloudiness of the water. It is used as an indicator of the quality of water and the potential for interference with disinfection. In addition, the sediments that cause turbidity can also add to taste, odor and color problems in the water. By monitoring the level of turbidity on a continual basis, it is possible to establish times that high turbidity levels can be expected, such as during the spring and fall of the year. Then, if a sustained high level occurs at an unexpected time, corrective actions can be started. This may include looking for unusual uses in the watershed or other unauthorized action in or around the watershed area that may need to be terminated or have corrective actions implemented.

To report Emergencies: Monday through Friday 8:00 A.M. to 4:00 P.M., Contact HWWCo at (603) 643-3439.

After hours, weekends and holidays, contact Hanover Dispatch at (603) 643-2222.

Hanover Water Works Company is owned jointly by Dartmouth College (52.8%) and the Town of Hanover (47.2%) as a private utility regulated by the Public Utility Commission (PUC). A Board of Directors appointed by the Owners governs the Company. The Company is operated and managed by the Town of Hanover.

**Hanover Water Works Company
Serving the Town of Hanover, NH
Annual Water Quality Report for the Year 2008**



Is my drinking water safe?

We are pleased to report that our drinking water is safe and meets federal and state requirements. Since October 2006, major changes have occurred to the methods which HWWCo uses to treat your drinking water with the addition of a new membrane filtration facility. The undesirable aesthetic quality of the water experienced in the past has been corrected since the membrane filtration facility has been in operation. HWWCo strives to provide the best drinking water of any utility in New Hampshire to its customers.



Fletcher Reservoir

Hanover Water Works Company (HWWCo) obtains surface water from three reservoirs located in an area to the east of down town. Fletcher Reservoir, the lowest one, was constructed in 1893 and has a capacity of 215 million gallons. In 1924, a second reservoir was added off of Trescott Road. This reservoir has a maximum storage capacity of 190 million gallons. Hanover Water Works Company owns and manages the entire contributing watershed of these two reservoirs. A third reservoir, located off of Hanover Center Road was added in 1962 with a capacity of 100 million gallons. Annual sanitary inspections are performed to ensure uses within the watershed are consistent with a drinking water supply. The total storage of all reservoirs is 505 million gallons. In October 2006, the new Dr. William E. Boyle Water Filtration and Treatment Facility was put on line.

How can I get involved?

If you have any questions regarding this water quality report, please contact Mr. Peter Kulbacki, General Manager, Hanover Water Works Company at 643-3439 or Mr. John F. Dumas, Water Treatment Division Superintendent at 640-3238. The Board of Directors meets regularly; you may obtain information regarding meeting dates by contacting Ms. Terry Jillson at 643-3439.

Why are there contaminants in my water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (1-800-426-4791).

General Information regarding Hanover Water Works Company:

The success of the Dr. William E. Boyle Membrane Filtration Facility for treating the water for the community has been noted by many through the absence of taste, odor and color, especially during the fall and spring reservoir rollover periods. The HWWCo is confident this facility will meet or exceed all federal and state requirements for many years.



Dr. William E. Boyle Water Treatment Facility

The Hanover Water Works Company operates and maintains two pumping stations and four storage tanks. Balch Hill pumping station is now housed at the new water filtration facility and the storage tank is located on Balch Hill. The second pumping station is located on Route 120 and the storage tank is located off Greensboro Road. These facilities help to provide water to the consumer at adequate supply and pressure in the higher elevations on the South end of town. The third tank is located off Route 120 behind the Greensboro Road pump station. This tank is used to provide additional storage and supply to supplement the daily water demand of the community. This tank allows the water treatment facility to run at a more constant rate rather than the up and down demands of the various times of day. A fourth tank was added in conjunction with the construction of the new water facility in 2006. This tank is used as a storage vessel capable of holding one million gallons of water. This provides a large buffer in the event of large instantaneous demands such as a large fire or to keep up with high summer demands.

The Hanover Water Works Company serves 1830 metered customers. This includes multi-family residences, industries, institutional and commercial users. The average daily flow for the past year was 1.04 million gallons per day.

The water is treated with several chemicals prior to entering the distribution system. Sodium Fluoride is added to help promote strong teeth and bones. Sodium Bicarbonate (Baking Soda) is added as a corrosion inhibitor. The Baking Soda raises the pH of the water and adds a buffer, making the water less corrosive. This also helps to prevent leaching of lead and copper from household plumbing. Ortho Phosphate is also added to aid in the corrosion inhibiting process. The Ortho phosphate produces a very thin film on the inside of the pipes to prevent contact between the pipes and the water. Sodium Hypochlorite is used to disinfect the water prior to entering the distribution system. The sodium hypochlorite provides a further degree of treatment eliminating any remaining bacteria and viruses that may be present in the water making the water safe for human consumption. Sodium hypochlorite is not harmful to humans in the dosages used to treat the potable water supply.

Postal Patron

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Serving the Town of Hanover
194 Lebanon St
Hanover, NH 03755**

**Presorted Standard Mail
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Permit #192**



Parker Reservoir



Jack Nelson Reservoir

Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Definitions: **MCLG:** Maximum Contaminant Level Goal, or the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety. • **MCL: Maximum Contaminant Level:** The highest level of a contaminant that is allowed in drinking water. They are set as close to the MCLGs as feasible using the best available treatment technology • **AL:** Action Level, or the concentration of a contaminant which, when exceeded, triggers treatment or other requirements which a water system must follow. • **TT:** Treatment Technique or a required process intended to reduce the level of a contaminant in drinking water. **MRDLG:** Maximum residual disinfectant level goal or the level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants. **MRDL:** Maximum Residual Disinfectant Level or the highest level of a disinfectant allowed in drinking water. There is convincing evidence that the addition of a disinfectant is necessary for control of microbial contaminants.

Lead and Copper –To be in compliance with the lead and copper rule, no more than 10% of the total sites sampled can have results higher than 0.015 mg/L of lead or 1.3 mg/L of copper. For HWWCo, this means we are allowed 4 sites with results above the action limits for each contaminant. There were two rounds of sampling completed in 2008. The first round performed in March had 8 sites that had results greater than the action limit for lead and no sites with results higher than the copper limit. The second round done in September passed with only 2 of the 40 sites returning values higher than the lead action limit and no sites with results greater than the action limit for copper.

The staff has been working on more consistent feeding of the corrosion control chemicals. Although the chemicals are added on a continuous basis, we have suffered from equipment breakdown at the approximate time of sampling and we feel this has contributed to the failed sampling. The results are very close to the action limit at 0.022 mg/L for the majority of failures. Since this is only in 5 – 8 samples from the 40 and in various locations around town this doesn't indicate a complete failure in the corrosion control strategy rather a potential breakdown in some isolated areas.

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested. It is recommended by the EPA and DES that you flush your tap for 30 seconds to 2 minutes (save the water to irrigate your plants) before using tap water for consumption. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).

ADDITIONAL INFORMATION

Backflow Prevention Device Information

As many of you have noticed the HWWCo included in our quarterly newsletter a section regarding backflow prevention devices, what they are and why they are important. At that time we had asked all customers of the HWWCo, residential, commercial and industrial to contact us to make an appointment for an inspection to determine if a backflow device was in place or not. If the device is not present the customer is obligated by state regulation and HWWCo regulation to have one installed. If it is determined a device must be installed, the consumer is also required to contact HWWCo for a confirmation inspection once the device has been installed. Any of the local plumbers can perform the installation of the device for you. In general, any single family residence will require a Watts model #7 or equivalent and any commercial/industrial facility will require a reduced pressure zone testable device such as a Watts #009. If you have not installed a backflow device or had a visit from the HWWCo, please contact us for an appointment at your earliest convenience. It is required for your protection.

SOC and VOC Information

The Hanover Water Works Company has been operating under a waiver for Synthetic Organic Compounds (SOC) and Volatile Organic Compounds (VOC) sampling since May 1994. The waiver was granted because it was demonstrated through several consecutive rounds of testing that neither contaminant met or exceeded the MCL. Therefore, there was no reason to suspect any occurrence of the contaminants provided conditions remain stable. As a precautionary measure, the SOC waiver is for six (6) years and VOC waiver is for three (3) years. Sampling for VOC occurs each renewal cycle and sampling for SOC occurs every other renewal cycle. Both SOC and VOC were tested in 2007. All sample results showed VOC & SOC are below the detectable limits of the laboratory testing equipment. This means the levels are very low and not harmful, if in fact, they exist. The next renewal date is April 1, 2010. Any questions regarding the waivers or the renewals should be directed to Mr. Peter Kulbacki, General Manager of Hanover Water Works Company.

Additional Testing Information

In our continued efforts to ensure the consumer a clean and safe product, the Hanover Water Works Company does additional testing outside the DES requirements. This includes a monthly in-house sampling at the dedicated sampling sites throughout the Town for 11 parameters including pH, iron, manganese, free chlorine residual, total dissolved solids, hardness, alkalinity, phosphorus and turbidity. This sampling is in addition to the required monthly sampling for compliance and is performed as a check on the conditions in the system. Chlorine Residual is measured on a continual basis prior to entering the distribution system. A daily bench test is performed to confirm the readings of the constant monitoring instruments. We have also tested for inorganic contaminants such as cyanide, arsenic, cadmium, mercury, sodium, zinc, etc. The results of this analysis were all below the MCLs.

The source water was tested in 2002 for both Giardia and Cryptosporidium and neither was found to be present in our water. This is good news for the consumer as treating for these contaminants using past treatment techniques is difficult and unreliable. However, the new membrane technology provides a positive barrier that does not allow the oocysts and spores to pass through. There is always a danger of these contaminants being present in an open reservoir source but the physical characteristics of the membranes and the built in safe guards that protect against an inadvertent breach will provide safe water.

During 2003, samples were obtained from the source water and the finished water for radionuclides. The result of the analysis of these samples indicates the levels to be well below the action limits. As a result, we do not anticipate any further sampling for this contaminant. These results are available upon request at the Hanover Water Works Company.

New Membrane Filtration Facility Information

The Dr. William E. Boyle Water Treatment Facility continues to prove to have been an excellent investment for both the HWWCo and the community of Hanover. The year-round consistency of high quality water from the facility is a major improvement and the threat of bacterial contamination is all but eliminated by the membrane filtration system combined with the minimal amounts of sodium hypochlorite required to maintain a residual in the distribution system. Due to the superior filtration qualities of this process, the HWWCo has benefited by having the requirement of some very expensive and labor intensive sampling for the current regulations regarding disinfection byproducts waived. We continue to fine tune the operation of the facility to not only improve the quality of the water but to be able to more effectively and efficiently produce an aesthetically pleasing and safe drinking water. The HWWCo staff looks forward to continuing to operate this facility with little difficulties for many years.

We invite you to schedule a tour of the new Dr. William E. Boyle Membrane Water Treatment Facility. Please contact Mr. John F. Dumas at 640-3238 for an appointment between the hours of 7:00 AM – 3:30 PM, Monday through Friday.

TEST RESULTS

| Contaminant | Violation Yes/No | Level Detected/Range Detected | Unit of Measure | MCL | MCLG | Likely Source of Contamination |
|------------------|------------------|-------------------------------|-----------------|--------|------|---|
| Total Coli forms | No | Absent | Present/Absent | Absent | 0 | Naturally present in the environment |
| Fecal E-Coli | No | Absent | Present/ Absent | Absent | 0 | Human and animal waste |
| Turbidity | No | 0.01 – 1.42 | NTU | TT | N/A | Soil runoff, erosion of natural deposits |
| Fluoride | No | 0.0 – 1.4 | mg/L (ppm) | 4 | 4 | Water additive which promotes strong teeth, discharge from aluminum factories and fertilizers |
| Nitrate | No | <0.500 | mg/L (ppm) | 10 | 10 | Runoff from fertilizer use, leaching from septic tanks |
| Lead | Yes | < 0.001 – 0.62 | mg/L (ppm) | 0.015 | 0.0 | Corrosion of household plumbing systems, erosion of natural deposits |

Abbreviations: ppt: parts per trillion • ppb: parts per billion • ppm: parts per million • N/A: not applicable • NTU: Nephelometric Turbidity Unit • MFL: million fibers per liter • nd: not detectable at testing limits * pci/l: pico curies per liter, a measurement of radioactivity.

Health Effects Information:

Total Coliforms - Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present.

Fecal coliforms/E.Coli - Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.

Turbidity - Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.