



WATER REPORT - MANGANESE

The water system in the Village of Burk's Falls is experiencing some water aesthetic issues. It is believed that the presence of manganese in the water supply is the root cause, but we are continuing to investigate. Manganese is a natural and common element in nature. It is not regulated and presents no health concerns. With that said it is discoloring the water, but only at certain times and random locations. Staff are researching other areas also experiencing this issue and continue to work with OCWA and MOE to determine if any action is required.

BACKGROUND

The first indication of this was back in 2017 when the residents at 124 Sharpe St. issued a water complaint with the Village regarding stained fixtures. The public works staff performed weekly fire hydrant flushing to try to remedy the problem, which it seemed to help. On August 3, 2017 Don Michaud from OCWA took a water sample at the hydrant before the hydrant was flushed, 10 min after the hydrant was flushed and 20 min after the hydrant was flushed. Don also took a sample at the 124 Sharpe St. after the water ran for 5 minutes. After the results and internal discussion, public works installed a new water main. In September 2017 a new water main was installed and there have been no more water quality issues to the knowledge of the Village of Burk's Falls.

In the spring of 2019, the Village of Burk's Falls received another water aesthetic complaint at 15 Mackenzie St. The public works department picked up the sample that the resident took and gave it to Don Michaud to test the Iron and Manganese content. Public works discussed with Don Michaud (OCWA) about increasing the test frequency for Iron and Manganese to quarterly at the well #3 and the shop and office, to give us a more diverse sample area and through the different seasons. No further action was taken by public works and there have been no more complaints from 15 Mackenzie St.

On Monday July 15, 2019 a resident that lives at 141 Queen St. came into the office and complained about dirty water. Public works staff performed a bacti sample at 141 Queen St. on Tuesday July 16, 2019 and the results showed no signs of a water quality issue.

On August 7, 2019 the resident came into the Village office again and complained about dirty water. There was a water leak discovered between these two dates and originally the thought was the water leak was the cause of the discoloured water. However, after that a discussion between public works staff and the Clerk determined flushing the water main would be a good first step to determine the root problem. The water main is old cast iron and the laterals are old galvanized lines. The Village office notified residents in the area regarding a hydrant to be flushed on August 13, 2019 at 11:00. On August 9, 2019 public works staff entered and took a sample to be tested for Iron and Manganese at 141 Queen St..

ACTIONS

Iron and Manganese are not health related issues and are not regulated in Reg. 170 and are only considered an aesthetic issue. However, I do not believe this should be acceptable and should be taken seriously. Public works has been doing research and reaching out to contractors/suppliers that are more familiar with dealing with Iron and Manganese. The Ministry of Environment is aware of the issue and sent an extensive file on Iron and Manganese.

Until more information is known Public Works will initiate a flushing program for affected areas on a monthly basis to ensure we are collecting data to be able to benchmark and evaluate the problem. We will select up to four locations to consistently take samples from in different parts of the Village as well.

We are also looking into how the testing is done to determine the most efficient and effective way to continue to monitor the situation. Some well house equipment is also affected by the element and requires replacement on a much more frequent basis.

FINANCIAL IMPLICATIONS

Costs to continue this monitoring will be the time and materials for flushing hydrants more regularly, time for the manganese test to be completed (currently OCWA) and possibly moving to a semi-annual flushing program rather than only once a year. As we narrow down the issue, we will keep Council informed. There is no hard dollar figure to provide at this time.

Dated August 20, 2019

Derek Smith, PW Foreman

A small synopsis is below on what Manganese is and is provided from the British Columbia Ground Water Association

What are iron and manganese?

Iron and manganese are metallic elements present in many types of rock. Iron has the symbol “Fe” and manganese has the given symbol “Mn.” Both are commonly found in water and are essential elements required in small amounts by all living organisms. Concentrations of iron and manganese in groundwater are often higher than those measured in surface waters.

The Aesthetic Objective (AO) for iron in drinking water is less than or equal to 0.3 milligrams per litre (mg/L) while the Aesthetic Objective for manganese in drinking water is less than or equal to 0.05 mg/L. The taste and smell of manganese or iron at concentrations above the drinking water guidelines may be noted by some water users.

What are the known sources of iron and manganese?

The most common sources of iron and manganese in groundwater are naturally occurring, for example from weathering of iron and manganese bearing minerals and rocks. Industrial effluent, acid-mine drainage, sewage and landfill leachate may also contribute iron and manganese to local groundwater.

What are the environmental health concerns?

At concentrations found in most natural waters, and at concentrations below the aesthetic objective, iron and manganese are not considered a health risk. Water with a high concentration of iron or manganese may cause the staining of plumbing fixtures or laundry. Manganese solids may form deposits within pipes and break off as black particles that give water an unpleasant appearance and taste. Similarly, iron can collect and block pipes or fixtures and produce colour, taste and rust flakes in water. Both substances can increase the growth of unwanted bacteria that form a slimy coating in water pipes.

Where have high iron and manganese levels been found in B.C. well water?

Iron and manganese are found naturally in groundwater in all regions of British Columbia. In local areas, concentrations of iron and manganese can range up to several mg/L. The concentration of iron and manganese in well water can fluctuate seasonally and vary with the depth and location of the well and the geology of an area. Iron and manganese naturally occur in groundwater that has little or no oxygen, typically in deeper wells (but not always), in areas where groundwater flow is slow, and in areas where groundwater flows through soils rich in organic matter. Concentrations that exceed the drinking water guideline can occur locally anywhere in the province.