GOODE
ENVIRONMENTAL SERVICES

August 29, 2016

VIA EMAIL:
dloveridge@sd61.bc.ca

Attention: David Loveridge

Re: Water Quality (lead)

If you have any questions regarding this report, please contact me at 250-812-4795.

Sincerely,

Goode Environmental Services

Per:

Sheena Goode-Jensen, B.Sc.
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# SD61 Water Quality

Prepared for:

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Prepared by:

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## 1.0 INTRODUCTION AND SCOPE

Goode Environmental Services Ltd. was retained by SD61 to collect water samples from designated sampling points at various SD61 facilities. The samples were collected and delivered (same day) to MB Labs Ltd., Sidney for analysis. All samples were analyzed using recognized EPA methods (USP38-NF33 2015 233/EPA 7010 & EPA 200.9 7439-92-1. Digest EPA 200.2 Agilent 7900 ICP-MS, PE AAnalyst 800 + EDL, Zeeman.

### 1.1 Scope of Work

1) Obtain 4 water samples from each sampling point using recognized EPA sampling methods.
2) Deliver samples with completed Chain of Custody to MB Labs Ltd.
3) Review test results and enter all results into a spreadsheet, highlighting sampling points that have a high (> 10mg/L) level of lead.
4) Summary of results

## 2.0 METHODOLOGY

Four consecutive 250 ml samples were taken from each sampling point. The 4 samples consisted of:

1) Standing sample – pre flush sample (tap not used for 12 – 24 hours)
2) 15 sec flush – water run for 15 seconds before taking sample
3) 30 sec flush - water run for 30 seconds before taking sample
4) Standing (2hr) – water not used for 2 hours after flushing for 45 seconds

The samples were placed in coolers and delivered to the lab at the end of the day. All samples were preserved with nitric acid on site.

## 3.0 FINDINGS

Refer to spread sheet for test results.

## 4.0 CONCLUSION

Numerous sample points had levels of lead that were elevated or above the recommended limit (>10 mg/L as per Canadian Drinking Water Standards, Oct. 2014). In most cases the lead levels were reduced by flushing. However, at some sampling points flushing did not reduce lead levels enough to make them compliant with the Canadian Drinking Water Standards (Oct. 2014).

It is also important to note some sample points that contained a significant amount of lead, saw levels increase significantly after water was left standing in the pipes for 2 hours. These results indicate that flushing alone is not always an effective procedure to keep the amount of lead in the system below the maximum acceptable limit required. In some cases, routine flushing throughout the day did keep the level of lead contamination below the maximum allowable limits but once the flushing stopped the lead levels increased.

Filters have been installed at 4 different sites at Uplands School. After reviewing the results from water samples that were taken before the filters were installed and after the filters were installed, it is evident that the filters are very efficient at removing most of the lead (<1 mg/L) while the water is running. However, there is still a problem with lead accumulating in the water if the taps are not run for an extended period of time. The pre-flush (standing) samples that were taken from these 4 stations all had high lead levels which quickly dissipated once the water was run for a short period (flushed for 15 seconds). This indicates that there could be a source of contamination coming from a point between the filter and the outlet, water that is accumulating in the fixture and doesn't pass through the filter before exiting the tap or faucet.

Recommendations:

1) If lead levels are below 50 mg/L replace taps and retest. If lead levels remain above 10 mg/L, add a filter.
2) If lead levels are > 50 mg/L, replace taps and add filter.
3) If still getting high lead after putting in filter and replacing taps, may need to replace fountain or do further investigation to determine source of lead contamination.

Once remediation is complete, additional water samples should be taken to confirm that remediation was effective.

All sites should be monitored by testing a representative number fountains and sinks on a routine schedule. Manufacturers recommend that the filters should be replaced with new filters every 3-6 months. It is recommended that the filters are monitored to determine when they should be changed.

## 5.0 LIMITATIONS

Work performed by Goode Environmental Services Ltd. was conducted in accordance with generally accepted scientific practices current in this geographical area at the time the work was performed. No warranty is either expressed or implied, or intended by the agreement executed with the Client, or by furnishing oral or written reports or findings.

The Client acknowledges that subsurface and concealed conditions may vary from those encountered or inspected. Goode Environmental Services Ltd. could only comment on the conditions observed on the date(s) the assessment was performed. The work was limited to those areas of concern identified by the Client or outlined in our proposal. Other areas of concern may exist but were not investigated within the scope of this assignment.

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