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2017 ENVIRONMENTAL MONITORING REPORT GOLDEN DISPOSAL FACILITY (MR – 17006), GOLDEN, B.C.

Prepared for:

Columbia Shuswap Regional District
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April 13, 2018

Project # 14-024-16

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Dear Mr. Van Nostrand:

Re: 2017 Environmental Monitoring Report – Golden Disposal Facility, Golden, B.C.

Western Water Associates Ltd. (WWAL) is pleased to provide this report which summarizes environmental monitoring at the Golden Refuse Disposal Facility (RDF) in 2017. For the 2017 reporting, time series plots were created from historic and current data. This temporal analysis helps us understand the degree of impact on groundwater over time. This report satisfies the requirements of the provincially issued Operational Certificate and is suitable for submission to the B.C. Ministry of Environment.

We trust that the professional opinions and advice presented in this document are sufficient for your current requirements. Should you have any questions or if we can be of further assistance in this matter, please contact the undersigned.

WESTERN WATER ASSOCIATES LTD.

Reviewed by:

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TABLE OF CONTENTS

List of Figures (following text)

List of Tables

List of Appendices

1. INTRODUCTION AND SITE BACKGROUND

Western Water Associates Limited (WWAL) was retained by the Columbia Shuswap Regional District (CSRD) to prepare the 2017 Annual Environmental Monitoring Report for the Golden Refuse Disposal Facility (RDF) (hereinafter called the "site") as part of a district-wide monitoring contract. This report presents the monitoring for the 2017 report period from January 1 to December 31, 2017. Associated Engineering (formerly Summit Environmental Consultants Inc.) previously reported on the 2008 to 2013 monitoring programs. Prior to 2008, Sperling Hansen Associates (SHA) prepared the annual reports (SHA 2008). In 2014 WWAL was awarded the monitoring contract and we are pleased to provide the results of the 2017 environmental monitoring program at the Golden Landfill in this report.

The Golden RDF has operated as a natural attenuation site since the late 1970's when the permit was transferred to Columbia Shuswap Regional District (CSRD). The site operates under the now referenced Operational Certificate (OC) 17006, issued May 5, 2003 and most recently amended August 29, 2012, by the British Columbia Ministry of Environment (MoE). The Golden waste shed includes the municipality of Golden and CSRD Electoral Area A, which includes the unincorporated communities of Parson and Nicholson and services approximately 7,000 residents (Summit 2013). This report was prepared in accordance with the annual landfill reporting requirements outlined in Section 5.0 of the Operational Certificate 17006. A copy of the OC is included in Appendix A.

1.1 Objective and Scope

To meet the goal of assessing the long-term monitoring for groundwater impacts from landfill operations, the objectives of the program are to collect and analyze groundwater samples, and interpret analytical results in accordance with the OC (MoE 1996) and the consulting agreement between WWAL and the CSRD. The tasks undertaken were as follows:

- Collect and submit to the laboratory, water samples as scheduled for the year;
- Assess the condition of local on-site vegetation for potential stress;
- Summarize water quality guideline exceedances from the 2017 results;
- Analyze the data and prepare the final annual report (this document); and
- Review the results with the CSRD Project Manager at the end of each year and provide recommendations to revise the program for future years, if warranted.

2. SITE DESCRIPTION

This section describes geographic location, bedrock and surficial geology of the study area, historical climate data, hydrologic data, and hydrogeology data for Golden RDF. Further, a description of the monitoring network that was sampled in the 2017 monitoring program is provided.

2.1 Location

The Golden RDF is located on a southwest facing slope approximately 2 km northeast of downtown Golden (Figure 1). The site covers an area of about 17 ha with the waste footprint covering an area of approximately 4.4 ha. The property is bounded on all sides by forest with Golden-Donald Upper Road

located along the western site boundary. The site is approximately 1 km north and above the Kicking Horse River, which is a major surface water body in the area. The nearest privately owned residence is within 100 m of the landfill boundary and is located just east of the site. The Golden RDF site is relatively flat and is at an elevation of 920 m above sea level (m asl), however the northeastern landfill area is located on a southwest facing slope and is at an elevation of 950 m asl. The site layout is provided on Figure 2 and the civic and legal address is as follows.

Civic: 350 Golden-Donald Upper Road in Golden, BC

Legal: Subdivision 12 of Section 18, Township 27, Range 21, West of the fifth Meridian, Kootenay District

2.2 Geology, Hydrology and Hydrogeology

Surficial geology in the Golden area are mainly comprised of a thick continuous glacial till blanket, which may include fluted landforms, morainal deposits, and drumlins (Geological Survey of Canada 2014). Deposits at the Golden RDF site consist of dense gravely sand and silty ablation till along the eastern slopes, with well-sorted bedded sand and gravels and alluvial deposits in the south central and western sections, as well as within the trench at the southwest corner of the site (Kala 1995; SHA 2008). Silt with sand and gravel deposits were observed in test hole 4 (MW95-4) at the western edge of the landfill (Kala 1995). Based on well logs for test hole 7 (MW09-7) and MW09-6D the unconsolidated deposits appear to be thicker in the southern sections and thinner towards the north. Deposits in exposures along the west side of Golden-Donald Road (across from the RDF site) consist of dense, well-sorted sands and gravels with traces of silt and clay and occasional bedding planes.

The bedrock at the site consists of sedimentary strata of the Rocky Mountains Cambrian to Ordovician in age (540 to 445 million years ago). Bedrock geology is mapped as limestone, sandstone, shale, minor conglomerate, and associated meta-sedimentary rocks of the McKay Group (Massey et al. 2005). No bedrock was encountered in the five test pits completed during the Kala 1995 hydrogeological investigation. However, limestone bedrock was encountered at approximately 34 m (111 ft) below ground surface (bgs) at MW09-6D near the west central boundary of the site. Bedrock outcrops were noted in the northeastern part of the site.

The Kicking Horse River is approximately 1 km southeast of the RDF site and nearly 130 m lower in elevation (800 m asl). The river flows northwest through the western range of the Rocky Mountains and lower Kicking Horse Canyon where it merges into the Columbia River at the Town of Golden. The Columbia River flows northwest and is approximately 3 km west of the site. Hospital Creek, located in a deeply incised valley northwest of the landfill site, flows southwest into the Columbia River.

Surface drainage at the RDF site is dependent on the local topography. A narrow ravine located midway along the east side of the site collects the surface water from the east side of the site and diverts flow away from the landfill during extreme rain events or periods of high run-off from snowmelt. There are no

other surface water drainage courses leading away from the landfill. The permeability of the surficial deposits at the site ranges from low to moderate. Silty surficial deposits along the eastern side of the landfill limit groundwater recharge while the silty sand and gravel located in the south-central section of the landfill is typical moderately (SHA 2008).

The B.C. Water Resources Atlas shows MoE sand and gravel Aquifer 456 IIB approximately 60 m southwest of the Golden RDF boundary and is located at the confluence of the Columbia and Kicking Horse Rivers. This aquifer, which is classified as having a moderate demand, high productivity, and moderate vulnerability, covers an area of 10.2 km^2. Demand describes local reliance on the groundwater water source, productivity indicates relative well yields, and vulnerability describes the potential for contaminants to move from the surface into the aquifer. There are no MoE reported aquifers at the site location. Based on site topography and water level elevations from the three wells (MW09-6D, MW10-8, and DMW-2) completed in the local bedrock aquifer (Summit 2010), groundwater flow direction at the site is from northeast to southwest, moving from the uplands towards the Columbia and Kicking Horse Rivers. The groundwater flow direction should be confirmed once an accurate survey of the top of casing elevation of the wells is completed. Rain and snowmelt percolating through the landfill will likely migrate vertically down until reaching the water table.

2.3 Climate

The climate at the site is humid continental with relatively warm summers and a relatively short dry season, with Golden situated between two mountain ranges. The nearest climatic data available for the region is from the station at the Golden Airport (Climate STN ID 1173210). Climate averages for this station are available for 1981 to 2010. During this period, the recorded average annual temperature and total precipitation at Golden were 5.1°C and 466.8 mm/year, respectively (Environment Canada 2016). Recorded mean monthly temperatures ranged from – 7.9°C in January to 17.3°C in July. The recorded mean precipitation ranged from 24.1 mm/month in February to 51.1 mm/month in November. Table 1 summarizes the climate data from the Golden climate station.

Table 1: Monthly Average Climate Data (STN 1173210: 1981 - 2010)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Avg.
Temperature													
Daily Average (°C)	-7.9	-5.0	0.8	6.5	11.3	14.9	17.3	16.7	11.5	5.00	-2.0	-7.8	5.1
Precipitation													
Precipitation (mm)	45.9	24.1	24.4	24.4	34.5	49.7	50.6	45.3	38.0	34.9	51.1	43.9	466.8

Source: Canadian Climate Normals (Environment Canada, 2018)

2.4 2017 Monitoring Network

In 2016 WWAL was asked by the CSRD to standardize the naming scheme of the monitoring wells for all CSRD Refuse and Disposal Facilities (five sites in total). A legend outlining the previous and current monitoring well identification names for all the monitored sites is provided in Appendix B.

The 2017 monitoring network included five groundwater locations:

- two monitoring wells (MW95-2(dry) and MW09-6S)
- two domestic wells (DMW-1b and DMW-4); and
- two town supply wells (TW- #4 and TW- #6).

In 2017 three additional surface water locations were sampled during their presence during spring freshet.

Monitoring Well MW95-2 has been dry since 2007 and remained dry through 2017. Three onsite monitoring wells were installed in 2009: MW09-6S (shallow), MW09-6D (deep), and MW09-7 to replace decommissioned wells MW95-4 and MW95-3, respectively. MW09-7 has never been sampled as it has been dry since installation. Nested wells MW09-6S and MW09-6D are located along the western site boundary north of the landfill gate. Due to similar water chemistry at wells MW09-6S and MW09-6D, sampling of MW09-6D was considered redundant and therefore discontinued in 2011. Monitoring well MW10-8 was installed approximately 150 m northwest of the site to assess potential offsite leachate migration. After assessing the geochemical profile, we believe surface contamination from road salting is very likely influencing water quality at MW10-8; therefore, this well was not sampled in 2017 (last sampled May 2015) and the well should be closed.

Domestic well DMW-1b, located east of the site, was added to the program in 2011 as a replacement to upgradient monitoring location DMW-1. Monitoring at DMW-1 was discontinued after 2010 as a raw water quality could not be sampled due to a filtration system connected to all the water outlets. DMW-4, located east of the site, was added to the program in 2013, as one of the nearest available cross gradient receptors. DMW-1 characterized background water quality, therefore DMW-1b and DMW-4 are now considered as new background wells.

Town Well #4 is one of Golden's five municipal water supply wells located approximately 1.5 km west of the landfill site. Beginning in 2013, another supply well (Town Well #6) was targeted for sampling because the capture zone for this well is closer to the landfill than Town Well #4 (Golder 2006). Town Well #4 was sampled during the April and November sampling events and was unable to be sampled during the August sampling event in 2017 due to physical damage of the building. Table 2 summarizes the current monitoring locations and available well logs are provided in Appendix B.

Sampling at Golden RDF occurs three times annually with the 2017 sampling events occurring on April 5, August 29 and November 20. Landfill gas monitoring points GP-6S/GP-6D and GP-7S/GP-7D were also installed in 2009 and are currently being monitored by the CSRD personnel.

Three additional surface water samples were taken during the spring (April) 2017 sampling event. The neighbour, located on the southern side of the Golden Landfill observed surface water runoff entering her property, which was understood to be occurring from approximately March 23 to March 30, 2017. When

WWAL staff was on-site on April 5, 2017 the runoff had ceased. Sampling was conducted at two, on-site, pooled breakout locations at the landfills south slope on April 5, 2017 by WWAL staff (samples named "Runoff #1" and "Runoff #2") (Figure 3). Runoff #3 was sampled off-site, by the neighbour, Andrea Weissenborn, on March 30, 2017. Runoff #3 was provided to WWAL staff on April 5, 2017 and was sent for analysis; however the sample was not kept on ice and did not meet the lab required hold time or temperature.

Table 2: Groundwater Monitoring Location Summary Information

Sample Location	Depth of Well (m btoc)	Aquifer Type/ Primary Lithology	Approximate Ground Surface Elevation (masl)	Location Description
MW09-6S (MW-6S)	34.5	Bedrock	920	Located along the western boundary of the landfill site and is the northern most on-site well.
MW09-6D (MW-6D)	65.9	Bedrock	920	Nested with MW09-6S
MW10-8 (TH-8)	26.2	Bedrock	921	Located approximately 300 m northwest of the site along Golden Donald Upper Rd.
Town Well #4	Unknown	Unknown (assumed to be unconsolidated)	790	Located approximately 1.5 km northwest of the site on a strata road north of 14th St N.
Town Well #6	Unknown	Unknown (assumed to be unconsolidated)	Unknown	Located approximately 2 km northwest of the site on the west side of 11th Ave. N.
DMW-1b	60	Bedrock	975	Located approximately 150 m east of the landfill site on Hietala Rd.
DMW-4	120	Unknown	Unknown	Located approximately 250 m east of the landfill site just north of Hietala Rd.
Dry Wells				
MW95-2 (TH-2)	22.5	Unknown	915	Located along the south-central boundary of the landfill.
MW09-7 (TH-7)	31.7	Unconsolidated (sand silt and gravel)	Unknown	Located along the western boundary of the landfill (south side) near Golden- Donald Upper Rd and Granite Dr.

Note: **masl** = metres above sea level; **mbtoc** = metres below top of casing; Ground surface elevations were measured by Summit, accurate to ±30 cm. Depth for both domestic wells are approximate and are determined from personal communication with home owners.

3. METHODS

The following sections outline the program methods, including parameters sampled and field techniques used for the program.

3.1 Sampling Parameters

The 2017 laboratory assessed water quality parameters included the following:

- Total Alkalinity (total as $CaCO_3$);
- Total suspended solids (TSS)
- Turbidity;
- pH and Conductivity;
- Hardness (dissolved, as $CaCO_3$);
- Anions (chloride, fluoride, bromide, and sulphate);
- Nutrients: (nitrate (as N), nitrite (as N), and ammonia (as N)); and

- Dissolved metals.

Total metals were sampled at domestic wells and town wells during the April and November sampling events in 2017. Dissolved metals were sampled at these locations for the August 2017 sampling event in order to compare metal concentrations between the landfill, and domestic and town well locations.

The groundwater monitoring program conducted in 2017 consisted of hydraulic (water level) monitoring, field measurements of pH, electrical conductivity (EC), temperature, and oxidation-reduction potential (ORP) and dissolved oxygen (DO) recorded during purging and immediately before sampling. All of the above-listed parameters were analyzed during each sample event, except VOC's, which are sampled once per year (spring event).

3.2 Sampling Methods and Protocols

In order to ensure that representative groundwater samples were obtained from the monitoring wells and that no contamination of the recovered samples occurred. Sampling protocols followed the second edition (draft) of the "Landfill Criteria for Municipal Solid Waste" (MoE 2013), "British Columbia Field Sampling Manual for Continuous Monitoring plus the Collection for, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples" (MoE 2013).

Prior to groundwater sample collection, each well was purged of the standing volume of stagnant water using a submersible well pump, dedicated bailers, peristaltic pump or Waterra tubing (as appropriate). The objective of purging is to pump groundwater from the well until a representative sample of the formation groundwater is obtained. This is typically achieved by removal of three to five times the volume of standing water in the well or purging the well dry and letting the well recover to at least half of its pre-pumping level. Purging was considered complete once sediment-free groundwater is obtained and/or the EC, temperature, ORP, and pH of the groundwater stabilize. The pump was decontaminated between each sample location. Groundwater samples were collected in the appropriate laboratory-supplied clean, new sample containers and preserved as required. Groundwater samples designated for metals analysis were field filtered to 0.45 micron and preserved.

All samples were packaged in a cooler and delivered to the laboratory within a 24-hour period for analysis. Groundwater samples were submitted, under chain-of-custody protocol, to Caro Analytical Services (Kelowna, BC), for analysis. The laboratory results were sent directly from the laboratory to Wireless Water, our database manager. The field and laboratory data were then merged and the data were available in one database for analysis by WWAL.

During each monitoring event, the following field data were recorded:

- water level;
- field measured parameters [temperature, pH, ORP, DO, and EC];

- field notes on procedures (e.g. purging rates) and any unusual observations (e.g. well condition, odours, colours, etc.);
- evaluation of vegetation health in the area surround the wells that could be attributed to landfill leachate (luxuriant growth, discolouration, die-off, etc.); and
- signs of leachate breakout zones (e.g. presence of unusual bacteria or algae at all sites, signs of liquid flowing from the surface).

The Relative Standard Deviation (RSD) for each sampled parameter were assessed by taking several replicate samples (at least three in each set) at select locations during the 2017 sampling program. RSD is a statistical measure of reliability of the results for each parameter sampled at each location. A lower RSD means the parameter results are more reliable and representative. The RSD values in 2017 fall below 10% for all parameters except fluoride which was above 10% RSD. Further, microbiological parameters showed significant variability with high RSD, but this is not unusual when sampling living organisms. From results of the triplicate sampling we continue to see that the quality of the data does not affect conclusions made in this report.

4. RESULTS AND DISCUSSION

The following section describes field observations and the results of the water quality sampled at the Golden Disposal Facility in 2017. Annual water level elevations, water quality guideline exceedances in 2017, along with temporal and spatial trends for the Golden RDF monitoring program are discussed. The descriptive statistics (average, standard deviation, maximum, minimum and count) for select water quality results between 2002 and 2017 are summarized in Table 4, with the full water quality database of all historic and current results provided in Appendix C. The 2017 water quality reports provided by the laboratory can be found in Appendix D.

Our analysis of potential leachate impacts on the receiving environment employs two main approaches:

- comparison of monitoring results to guidelines (i.e. does a problem exist); and
- trend analysis (i.e. is the situation changing over-time or space).

The ensuing evaluation, elucidated in our discussion below, may then be used to inform decisions about future monitoring priorities as well as the overall program results. Water quality results were assessed both temporally and spatially.

Potential impacts to groundwater from landfill leachate are typically identified by assessing the concentrations of landfill leachate indicators relative to background groundwater concentrations. Typical leachate indicators may include, but are not limited to: ammonia, chloride, total alkalinity, sulphate, manganese, iron, calcium, magnesium, and the heavy metals cadmium, chromium, copper, nickel, and zinc (Christensen et al. 2001).

Figures 3 through 8 depict the time series plots for water quality parameters sampled at the five locations between 2002 and 2017. The landfill leachate associated parameters plotted include the following: chloride, electrical conductivity, dissolved sodium, sulphate, nitrate, dissolved Iron and dissolved manganese. Plotted results below the reportable detection limit are displayed as one-half the reportable detection limit.

- Chloride and Conductivity (Figure 3);
- Dissolved Sodium and Total Sodium (Figure 4);
- Sulphate (Figure 5);
- Nitrate and Modified Nitrate (Figure 6);
- Dissolved Iron and Total Iron (Figure 7); and
- Dissolved Manganese (Figure 8).

4.1 Vegetation

Trees at the south end of the site, which did appear to be stressed historically, have been removed to allow for installation of a road around the site. Trees, located on the private land to the south of the site appear to be generally healthy, though raven roosting has defoliated some trees. From previous years recommendations, the trees located on the property to the south were assessed by a forester who provided information stating that the trees did not appear to show signs of impact from landfill activities.

4.2 Water Quality Exceedances

Assessing impact on the receiving environment from operation of the Golden RDS is the objective of the current monitoring program at Golden. Due to the proximity of domestic water wells and surface water bodies (Kicking Horse River and Columbia River) in the vicinity of the site, the 2017 groundwater quality results were compared to the following applicable guidelines and standards:

- Guidelines for Canadian Drinking Water Quality Maximum Acceptable Concentration (health-based guideline) (GCDWQ MAC) and Aesthetic Objective (based on aesthetic considerations) (GCDWQ AO) (Health Canada);
- B.C. Approved Water Quality Guidelines for Drinking Water (BCAWQG DW) (MoE 2015); and
- B.C. Contaminated Sites Regulation 375/96, Schedule 6, Generic Numerical Water Standards for Freshwater Aquatic Life (CSR AW (F)) and drinking water (CSR DW) (MoE 2017).

The 2017 surface water quality results were compared to the following applicable standard, as there are deer that graze through the site and at the neighbouring property:

- BC CSR, Schedule 3.2, Generic Numerical Water Standards for Livestock (CSR L) (MoE 2017).

Table 3a and 3b provide lists of exceedances in water quality guidelines and standards relevant to landfill leachate impact. CSR AW(L) standards are intended to be applied to groundwater; therefore, the CSR AW standards are applicable.

4.2.1 Groundwater Quality Exceedances

It should be noted that BCAWQG DW guideline applies to drinking water that is treated with chlorine to address health issues related to production of haloforms (MoE 2001); since none of the monitoring wells are treated with chlorine this guideline does not apply to the monitoring well at the site.

Similar to previous years, a number of parameters were detected at concentrations above guidelines/standards in 2017 (Table 3). Consistent with historical data, the highest arsenic concentrations were found at DMW-1b; where concentrations exceeded the BCAWQG AL of 0.005 mg/l, the GCDWQ MAC and BC CSR DW of 0.010 mg/l, and the BCAWQG DW of 0.025 mg/l during all sampling events in 2017. Arsenic (dissolved) was also in exceedance of the GCDWQ MAC guidelines and BC CSR DW standards at DMW-4 for the first time since 2009. The arsenic, lithium, strontium and iron exceedances are believed to be naturally occurring and not related to landfill activity, as these metals can be found a high concentration throughout the Golden area and throughout interior B.C. It should be noted that residences at DMW-1b were notified by WWAL field staff of exceedances of the drinking water guidelines.

Like previous years, chloride was detected at concentrations above the BCAWQG DW, and GCDWQ AO (250 mg/l) at MW09-6S. Nitrate and sulphate concentrations at MW09-6S remain in exceedance of GCDWQ MAC (nitrate only), BCAWQG DW, and GCDWQ AO (sulphate only). Toluene exceeded at MW09-6S, typically volatile organic compounds are not sampled within the Golden program. They were assessed in 2017 as a one-time sampling, note the toluene exceedance at MW09- was around the detection limits.

Table 3a: 2017 Groundwater Quality Exceedances

Sampling Location	Guideline	2017 Exceedances
DMW-1b	GCDWQ MAC	Arsenic (total)
	GCDWQ AO	Iron (total)
	BC CSR DW	Arsenic (total), Lithium (dissolved), Lithium (total), Strontium (dissolved)
DMW-4	GCDWQ MAC	Arsenic (dissolved)
	GCDWQ AO	Iron (dissolved)
	BC CSR DW	Arsenic (dissolved), Lithium (dissolved), Lithium (total), Strontium (total)
MW09-6S	GCDWQ MAC	Nitrate (as N), Nitrate + Nitrite (as N) (calculated), Nitrite (as N)
	GCDWQ AO	Chloride, Manganese (dissolved), Sodium (dissolved), Sulphate
	BC CSR AW(F)	Nitrite (as N), Toluene
	BC CSR DW	Chloride, Cobalt (dissolved), Lithium (dissolved), Nitrate (as N), Nitrate + Nitrite (as N) (calculated), Nitrite (as N), Sodium (dissolved), Sulphate

4.2.2 Surface Water Quality Exceedances

Due to the presence of deer at and near the site, the surface water samples taken in the spring of 2017 were compared to the BC CSR Standard for Livestock (CSR L). Surface water samples Runoff 1 and Runoff 2, which were breakout (daylighted) locations at the toe of the south landfill slope, were sampled for the first time in the spring (April 5) of 2017. Runoff 3 was taken from an off-site location, by the neighbour to the south of the site on March 30, 2017.

The chloride concentrations of Runoff 1 and Runoff 2 are elevated at concentrations of 708 mg/l and 1,230 mg/l, respectively. These concentrations exceeding the CSR L standard of 600 mg/l. Runoff 3 collected from the neighbouring property had a much lower chloride concentration, at 5.5 mg/l. Further, Runoff 2 exceeded the CSR L standards for arsenic and chromium along with chloride and Runoff 3 exceeded for aluminum and chromium.

Table 3b: 2017 Surface Water Quality Exceedances

Sampling Location	Guideline	Exceedances
Runoff 1	BC CSR LW	Chloride
Runoff 2	BC CSR LW	Arsenic (total), Chloride, Chromium (total)
Runoff 3	BC CSR LW	Aluminum (total), Chromium (total)

4.3 Water Quality Trend Analysis From 2002 to 2017

Sample locations were selected to monitor potential receptors surrounding the Golden RDF. The Town wells (#4 and # 6) both monitor downgradient, off-site water quality at the confluence of the Kicking Horse with the Columbia River Valley. The capture zones for Town Well #6 and Town Well #4 are both southwest of the landfill and include industrial, commercial, and residential areas, which could also contribute contaminant sources. MW09-6S (shallow) monitors the upper (north) section of western boundary just prior to the groundwater flowing off-site.

Domestic wells DMW-1b and DMW-4 both monitor potential off-site contamination into the bedrock aquifer directly east of the site (upgradient and cross gradient) of the site. However, as these wells are located upgradient of the site, they are not likely to be affected by landfill operation and instead provide "background" bedrock quality upgradient of the site. Both MW09-7 and MW95-2 are intended to monitor on-site water quality near the southern (MW95-2) and southwestern (MW09-7) boundary of the landfill site; however, they have both been dry since their inception dates.

Overall, on-site MW09-6S continues to exhibit the highest degree impact for groundwater monitored at and beyond the site, with elevated electrical conductivity, chloride, nitrate, sodium, magnesium, and sulphate, relative to other sampled groundwater locations.

Table 4 provides the descriptive statistics for select water quality parameters and trend analysis for select indicator parameters are provided below. A summary of the water quality results for the surface water sampling, conducted in the spring of 2017 is proved in section 4.3.7.

Table 4: GW - Summary Statistics for Select Water Quality Parameters from 2002 to 2017

Analyte	Sampling Location	Unit	Ave	Std Dev	Min	Max	Count	Number of Exceedances
Conductivity	DMW-1b	µS/cm	1085	110	750	1220	21	0
	DMW-4	µS/cm	1040	133	790	1271	15	0
	MW09-6S	µS/cm	4168	1009	480	6600	28	0
	Town Well #4	µS/cm	815	204	63	1050	21	0
	Town Well #6	µS/cm	638	88	401	726	13	0
Chloride	DMW-1b	mg/L	37.9	9.4	12.4	52.8	21	0
	DMW-4	mg/L	18	8.5	11.7	46.5	15	0
	MW09-6S	mg/L	593	81	417	732	28	28
	Town Well #4	mg/L	75.5	11.6	57.6	105	29	0
	Town Well #6	mg/L	28.9	4.4	22.9	36.2	13	0
Sodium (dissolved)	DMW-1b	mg/L	29.3	5.7	23.5	47.5	15	0
	DMW-4	mg/L	33.2	11.3	17	51	9	0
	MW09-6S	mg/L	363	38	285	444	28	28
	Town Well #4	mg/L	41.7	5.3	34	58.2	24	0
	Town Well #6	mg/L	16.3	1.5	13.9	17.9	7	0
Sulphate	DMW-1b	mg/L	132	29	108	252	21	0
	DMW-4	mg/L	215	52	122	275	15	0
	MW09-6S	mg/L	821	86	606	950	28	28
	MW10-08	mg/L	47.4	9.6	36.5	72.9	17	0
	Town Well #4	mg/L	39.7	2.3	35.8	44.5	29	0
	Town Well #6	mg/L	24.4	1.8	20.4	27.6	13	0
Nitrate (as N)	DMW-1b	mg/L	0.041	0.098	<0.010	0.397	21	0
	DMW-4	mg/L	0.387	0.232	<0.010	0.725	15	0
	MW09-6S	mg/L	47.38	13.93	2.99	66.9	28	27
	Town Well #4	mg/L	1.29	0.222	0.755	1.72	29	0
	Town Well #6	mg/L	1.012	0.146	0.781	1.3	13	0
Manganese (dissolved)	DMW-1b	mg/L	0.00501	0.00303	0.0037	0.0158	15	0
	DMW-4	mg/L	0.00466	0.00323	0.0015	0.0127	9	0
	MW09-6S	mg/L	0.119	0.0869	0.0597	0.518	28	28
	Town Well #4	mg/L	0.0011	0.0017	<0.0002	0.0068	24	0
	Town Well #6	mg/L	0.00238	0.00267	0.0008	0.0082	7	0
Iron (dissolved)	DMW-1b	mg/L	0.27	0.112	0.014	0.404	15	7
	DMW-4	mg/L	0.075	0.187	<0.010	0.575	9	1
	MW09-6S	mg/L	0.13	0.261	0.01	1.21	28	4
	Town Well #4	mg/L	0.059	0.096	<0.010	0.386	24	1
	Town Well #6	mg/L	0.013	0.01	<0.010	0.033	7	0
Boron (dissolved)	DMW-1b	mg/L	0.162	0.065	0.104	0.386	15	0
	DMW-4	mg/L	0.247	0.134	0.07	0.465	9	0
	MW09-6S	mg/L	1.585	0.35	0.921	2.16	28	0
	Town Well #4	mg/L	0.023	0.013	0.012	0.042	24	0
	Town Well #6	mg/L	0.035	0.05	0.006	0.143	7	0

4.3.1 Chloride

Historically, chloride concentrations are lower at DMW-1b (average 38 mg/l), DMW-4 (average 18 mg/l), Town Well #4 (75 mg/) and Town Well #6 (average 29 mg/l) than at MW09-6S (average 593 mg/l) (Table 4). Further, concentrations at DMW-1b and Town Well #4 have remained relatively steady over time, as

have concentrations at DMW-4 and Town Well #6 (Figure 4). At MW09-6S chloride has been variable with a definite downward trend.

4.3.2 Electrical Conductivity

Electrical conductivity (EC) is relatively high at the monitored locations on-site as well as most locations off-site. Lowest levels are at both Town Well #4 and Town Well #6, which are around 800 µS/cm and 600 µS/cm, respectively. EC is elevated at the topographically upgradient domestic wells (DMW-1b and DMW-4); however, the levels are thought to be naturally occurring as the bedrock groundwater is highly mineralized.

EC at MW09-6S is elevated above all other monitored locations and is variable, with an average of 4,168 µS/cm (Figure 4). EC values at all locations are relatively stable with the exception of November 2012 at MW09-6S, which are anomalously low and may be incorrectly recorded. Further, conductivity at MW09-6S was also low, below 2,500 µS/cm in November 2016; however, it has since returned to historical levels, with the EC measured at 4,150 µS/cm in April 2017.

4.3.3 Sodium

Sodium at MW09-6S exhibits elevated concentrations (greater than 350 mg/l) relative to the other wells (all below 45 mg/l). Concentrations of sodium (Figure 5) at MW09-6S decreased from the initial sampling event in 2009 to late 2011, then increased from 290 mg/l in October 2011 to 444 mg/l in August 2013 but have since decreased to the lowest recorded concentration of 285 mg/l in November 2017. Like chloride, sodium levels remain reliability low and relatively consistent at Town Well #4, DMW-1b, DMW-4, and Town Well #6.

4.3.4 Sulphate

Sulphate concentrations (Figure 6) at MW09-6S remained elevated relative to the other wells, ranging from 663 mg/l to 799 mg/l in 2017. The next highest sulphate concentrations in 2017 were at DMW-4 with an average of 215 mg/l, followed by DMW-1b, with an average of 132 mg/l. The lowest concentrations were measured at the two town wells, where the sulphate concentrations have remained stable and below 40 mg/l. Sulphate concentrations at MW09-6S show a similar trend to sodium, with a general decrease up until late 2011, followed by a relatively steady increase till 2016 to about 900 mg/l, with a slight decrease in 2017 to a concentration of 663 mg/l (November).

4.3.5 Nitrate

Nitrate concentrations (Figure 7) at MW09-6S are elevated above background and the other monitored locations with an average of 47.38 mg/l. Nitrate concentrations at MW09-6S have halved in the past eight years; showing a decreasing trend at this location from 60 mg/l in November 2009 to 32.6 mg/l in November 2017, but still very high. The high levels of nitrate found at MW09-6S are not representative of natural groundwater quality and the most likely source is the Golden RDF.

The next highest nitrate concentrations in 2017 were at Town Well #4, which have been relatively stable with an average of 1.29 mg/l and concentrations of nitrate at Town Well #4 at the same level in 2017 as they were in 2004. Concentrations at DMW-4 and Town Well #6 show a variable yet increasing trends; however, nitrate remains below 1.25 mg/l. Nitrate at DMW-1b remained relatively stable since its addition into the program in 2011 and had concentrations below detection limits for the April and November

sampling events in 2017. Nitrate at DMW-4 showed a slight increase of 0.2 mg/l in August and again November 2014,but has since dropped to historically low levels.

4.3.6 Select Metals

As stated in Section 3.1, dissolved metals were analyzed at monitoring well MW09-6S and total metals were analyzed at domestic and community supply wells DMW-1b, DMW-4, and both town wells in April and November 2017. Dissolved metals were analyzed at domestic wells and town wells in August 2017, to compare results to the RDF well. Total metals analysis includes both dissolved and particulate metals, which should have slightly higher results compared to dissolved metals only. Concentrations of total metals are applicable for comparing to drinking water guidelines/standards, as humans consume the unfiltered groundwater. For monitoring wells, dissolved metals are the typical form of metals assessed.

Iron concentrations (Figure 8) at DMW-1b have been increasing since 2011 and are elevated above the other domestic well and both Town Wells with an average of 0.27 mg/l (Table 4). Concentrations of iron at MW09-6S were elevated between 2009 and 2010, but decreased to below 0.1 mg/l between May 2011 and August 2015 and again between August 2016 and November 2017, after peaking in November 2015 (1.21 mg/l). Iron concentrations at all other sampling locations, were at or lower than 0.1 mg/l in 2017, except for DMW-4. The highest recorded concentration of 0.58 mg/l was measured at DMW-4 in August 2017, before decreasing to 0.037 mg/l in November 2017. The typically low concentration of iron at MW09-6S and the low concentrations at the other sampled locations suggests that the elevated iron at DMW-1b is not related to landfill activity and that the elevated iron concentrations are likely naturally occurring.

Manganese concentrations (Figure 9) at MW09-6S are elevated, with an average concentration of 0.12 mg/l. Manganese concentrations at MW09-6S decreased from the first sampling event in 2009 to mid-2012, after which time concentrations have been stable at about 0.1 mg/l. Stable trends and lower manganese values (at or below 0.005 mg/l) were detected at the other wells.

Consistent with historical data, the highest arsenic concentrations were found at DMW-1b, where concentrations exceeded guidelines during the April and November sampling events in 2017 and has been in exceedance since November 2010. However, arsenic concentrations remain below detection limits at MW09-6S, which suggests that the presence of arsenic in DMW-1b is likely related to the parent rock material and not related to landfill activity. DMW-4 had an arsenic concentration of 0.0421 mg/l, measured in August 2017, exceeding guidelines. All other sample locations have remained relatively stable and low (≤ 0.006 mg/l) since August 2011.

The highest concentrations of boron were recorded at MW09-6S, with concentrations ranging between 1.57 mg/l and 2.03 mg/l in 2017. The trend at this location has been increasing since 2009 from 1.09 mg/l (May 2009) to 2.12 mg/l (May 2016), before decreasing slightly to 2.03 mg/l (April) in 2017. In contrast, boron concentrations at the other wells remain low with average concentrations less than 0.5 mg/l. Concentrations at the other wells are relatively steady over time, apart from DMW-4 which has a range of 0.07 mg/l to 0.66 mg/l within the five years it has been sampled (2013-2017). Boron sources include coal combustion products, municipal sewage, leaching of landfill materials, and the production of fertilizers and pesticides. The maximum dissolved boron concentration at DMW-4 was 0.465 mg/l (November 2013), when compared to MW09-6S (maximum of 2.16 mg/l) it is far below concentrations that may be

of concern at this time. However, continued monitoring is necessary to determine whether concentrations continue to rise.

4.3.7 Surface Water (Runoff) Samples

Sulphate concentrations at the three runoff sites are lower than the elevated concentrations present at MW09-6S. Runoff 1 has the highest sulphate concentration of 153 mg/l whereas, Runoff 2 and Runoff 3 had lower concentrations of 32.7 mg/l and 13 mg/l, respectively. Electrical Conductivity measured at Runoff 2 was elevated with a recorded value of 13,170 µS/cm and Runoff 1 had a lower value of 2,370 µS/cm. EC was 324 µS/cm at Runoff 3, indicating the runoff water has had short subsurface travel-time and is freshet water which has run overland and onto the neighbor's property to the south. Nitrate concentrations are low (≤ 2mg/l) at all three sample sites, with concentrations lower than detection limits at Runoff 2. However, Runoff 2 showed an excessively high concentration of ammonia at 928 mg//l, indicating the leachate runoff from the toe of the landfill has not nitrified.

5. CONCLUSIONS

From the analysis performed in 2017, the following conclusions are made:

C1 The environmental monitoring program was completed as planned, with the exception of an access issue at the Town Well 4, when it was out of service. Additionally, three surface water locations were sampled in the spring, and no surface water was present at the site during the 2017 summer or late fall events.

C2 Similar to previous years, exceedances of water quality guidelines were detected at the western property boundary of the landfill in 2017. Groundwater quality at well MW09-6S, located near the landfill boundary, continues to show evidence of impact from landfill operation. Elevated concentrations of chloride, nitrate, sodium, sulphate, and dissolved metals including boron and manganese indicate anthropogenic impact from landfill leachate.

C3 At DMW-1b and DMW-4, concentrations of arsenic and iron in 2017 were above the GCDWQ MAC, BC CSR DW, and the GCDWQ AO, respectively; these are not new exceedances and are related to landfill activity.

C4 The presence of ravens at the site have created issues with the birds rooting on neighbour's properties, there by affecting the foliage of nearby trees. Further, the ravens carry refuse off-site and create debris issues on neighbouring properties.

C5 High nitrate at MW09-6S is attributed to Golden RDF leachate effects, but has decreased to about one-half of the high concentrations (>65 mg/L) detected in 2009 (now about 33 mg/L.).

6. RECOMMENDATIONS

As per the WWAL 2013 hydrogeological review and based on the results of the monitoring program to-date, the following recommendations are provided:

R1 Monitoring at the South Property Boundary and Southwest Corner of the Landfill Site

a. As mentioned above, attempts to drill at the southwest corner of the landfill have been unsuccessful due to refusal during drilling (MW95-3) and budget constraints (MW09-7). Further, MW95-2 never reached the bedrock and has been dry since 2007. After drilling 40 m (130 ft) below ground surface without tagging the bedrock surface or locating groundwater, at the southwest corner of the landfill in 2009, we know there is at least 40 m of unconsolidated sand and gravel before reaching a potential water table (receptor). The uncertainty of the water table (or piezometric surface) depth at the south edge and southwest corner of the site means that drilling to reach groundwater at these locations could be costly and could potentially be unsuccessful or produce monitoring wells difficult to sample (if the wells need to be drilled to greater than 60 m (200 ft)). We understand this is one reason the CSRD has not pursued drilling at the south edge and southwest corner of the landfills site to-date. However, as of the spring of 2017, there is concern over potential off-site landfill leachate migration occurring due to the observed elevated nitrate concentrations in the groundwater at the west property boundary (MW09-6S) and due to observed over-land flow at the south property boundary (spring 2017); therefore, further on-site drilling should be initiated by the CSRD in 2017 to further characterize groundwater quality and groundwater flow direction. This drilling program will help inform the 5-year review of the hydrogeological characterization of the site.

b. Having three monitoring wells completed in the same aquifer is necessary to evaluate an actual groundwater flow direction at the site. Assessing an actual groundwater flow direction is required to know what direction potential off-site leachate migration could be occurring and where we would need to drill, off-site in the future, to delineate the extent of potential contamination to the aquifer from operation of the landfill. Prior to R2 below, where we recommend drilling off-site to help establish if off-site leachate migration is occurring (or establish a sentry well), successfully intercepting the groundwater table (or piezometric surface) and sampling the groundwater quality at the southwest corner and south edge of the landfill to help substantiate if drilling off-site at Granite Drive and Stoney Lane (approximate UTM coordinates U11, 502899, 568400, elevation 904 masl) is appropriate.

c. To enable monitoring at the southwest edge and south property boundary, we recommend drilling two new monitoring wells at these locations. The purpose of drilling these new wells will be to reach the unconsolidated aquifer and bedrock interface, where we expect to find a groundwater table (or just into the bedrock where we would locate a piezometric surface). Because the depth of the bedrock interface is unknown, in order to be successful at reaching the bedrock interface, budgeting for drilling the wells should be done with an over-estimate of the drilling depths; we recommend estimating a 122 m (400 ft) for the southwest corner and 60 m (200 ft) at the south property boundary, using an air rotary drilling rig.

R2 Potential Off-Site Migration of Landfill Leachate

a. Perform a receptor survey to inventory any newly installed wells near (1,000 m radius) the site, intended for domestic water use. The survey would include calling local drillers to assess if new wells were installed in the area, calling the Town of Golden to assess if new building permit applications have been received, and performing a windshield survey of major roads to see if new building activity is apparent. Further, sampling of domestic wells within 1,000 m of the site should be included in the scope of the receptor survey.

b. Sample the soils at the neighbour's property, to the south of the site to assess if overland runoff from the site has impacted off-site soils.

c. Once groundwater flow direction has been determined, from drilling on-site wells, drill a "sentry" monitoring well (a monitoring well between potential drinking water wells and a potential contaminant source) off-site; likely at the junction of Granite Drive and Stoney Lane (approximate UTM coordinates U11, 502899, 568400, elevation 904 masl). Note that the landfill is approximately 340 m from the edge of the Golder-modeled 10-year capture zone for Town Well #6 (Golder 2006) and this edge of the modelled 10-year capture zone corresponds with the location of the recommend off-site monitoring well.

d. After assessing the geochemical profile at the monitoring wells, we believe surface contamination from road salting is likely the source of high chloride and dissolved sodium (with low nitrate and other landfill associated parameters) at the previously monitored MW10-8, since its installation in 2010. We recommend closing the well in accordance with the B.C. Groundwater Protection Regulation and potentially drilling a new well to the northwest, away from the main road. However, establishing actual groundwater flow direction I the bedrock aquifer should be prioritized before further drilling of off-site wells.

e. Further, once MW95-2 has been successfully replaced with a functioning (screened deeper) monitoring well, MW95-2 should be closed in accordance with the B.C. Groundwater Protection Regulation

f. If off-site migration of leachate is confirmed after off-site drilling and sampling, the CSRD should implement a formal Leachate Management Plan for the Golden RDS.

R3 Water Quality Exceedances at DMW-1b

a. It has been challenging to find a representative "background" well to compare water quality downgradient of the Golden Landfill. Attempts have been made to drill a well, on-site and upgradient of the landfilled area without success; therefore, upgradient domestic wells (DMW-1b and DMW-4) were located and permission received to sample the wells was granted. The water quality of these domestic wells has proved to be poor, with exceedances in drinking water guidelines of arsenic, magnesium, and iron occurring regularly. Arsenic is a common water quality parameter to exceed guidelines within some surficial and bedrock aquifers surrounding Golden and throughout B.C.

b. We believe the water quality exceedances observed at DMW-1b are likely naturally occurring; however, to confirm this is the case, additional sampling of nearby DMW-2 and DMW-3 should be performed during the yearly monitoring to establish a sound understanding of the background bedrock water quality underlying the landfill site.

R4 Surface Water Run-on and Runoff at the South Property Boundary

a. As surface water run-on and then runoff was observed to be occurring onto the property to the south, during spring freshet 2017, soil samples program should be executed according to the provincial technical guidance document for soils assessments of contaminated sites (MoE 2017b).

b. The Surface Drainage Plan should continue to be implemented at the site to eliminated off-site overland flow of run-on and run-off water. Surfacing of on-site landfill leachate affected waters must be managed, as the site is frequented by wildlife and affected surface waters could be consumed by wildlife.

c. Further, to eliminate surfacing of leachate from the south toe of the landfill surface, an engineered material should be use to bury the daylighted leachate. Hybridized polar trees should be planted at the south property line, to help attenuate affected on-site water and soil.

d. To characterize the surface waters (assess if surface waters are affected or not-affected) and influence an engineered Surface Drainage Plan, continue water quality sampling of on-site surface waters, if present at the site during the tri-annual sampling events.

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Figures

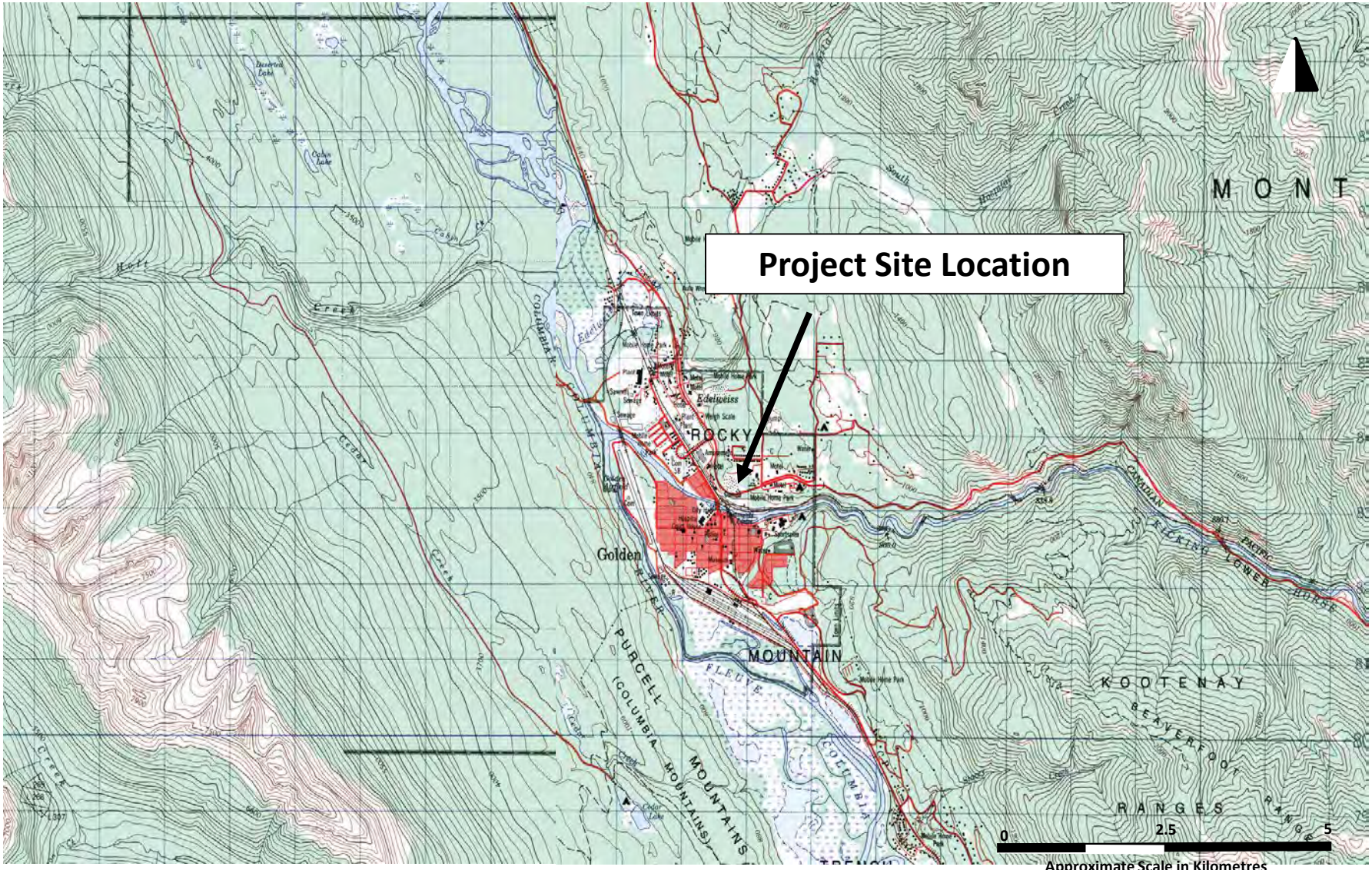

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Figure 1: General Site Map

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CHECKED	BRM	SCALE	See figure	DWG. NO.	n/a
REVIEWED	DG	FILE NO.		FIGURE VERSION NO.	

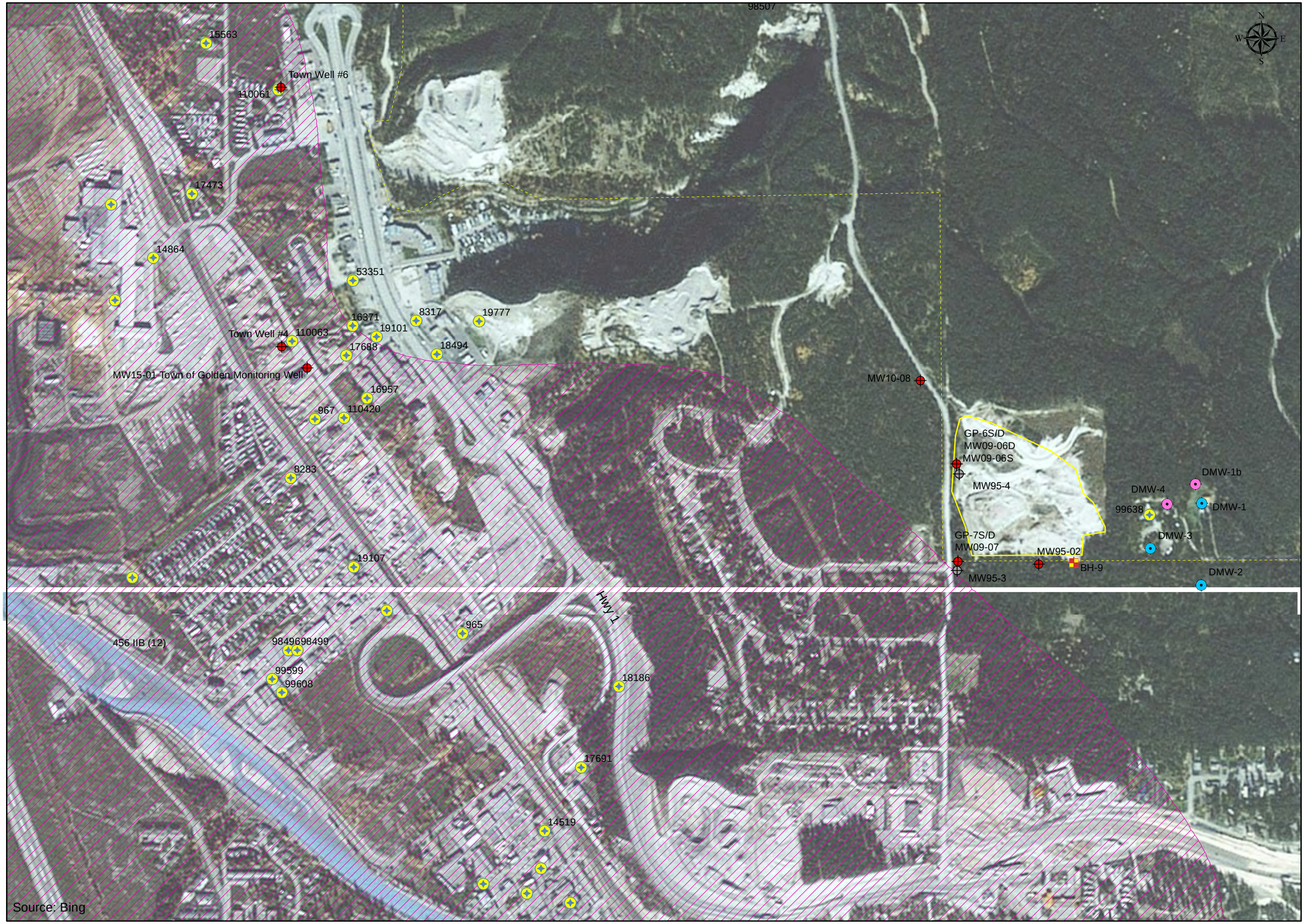

Figure 2 - CSRD Golden RDF.

Legend

- Borehole
- Monitored Domestic Well
- Monitored Domestic Well (Previously Sampled)
- Monitoring Well (Not Sampled in Current Year)
- Monitoring Wells
- Groundwater Well
- City Boundary
- Landfill Boundary
- BC Mapped Groundwater Aquifer

0 120 240 480 Meters

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Consultants in Hydrogeology and Water Resources Management

Reference

Client: CSRD
Project Number: 14-024-16
Date: October 31, 2016
Drawn by: Nathan Whitling
Checked by: Bryer Manwell

Digital data and orthophotos provided by CSRD and MOE

Coordinate System: NAD 83 UTM Zone 11

Key Map

Figure 3 - CSRD Golden RDF.

Legend

- Runoff Locations
- Borehole
- Monitoring Well (Not Sampled in Current Year)
- Monitoring Wells
- City Boundary
- Landfill Boundary
- BC Mapped Groundwater Aquifer

0 12.5 25 50 Meters

western water ASSOCIATES LTD
Consultants in Hydrogeology and Water Resources Management

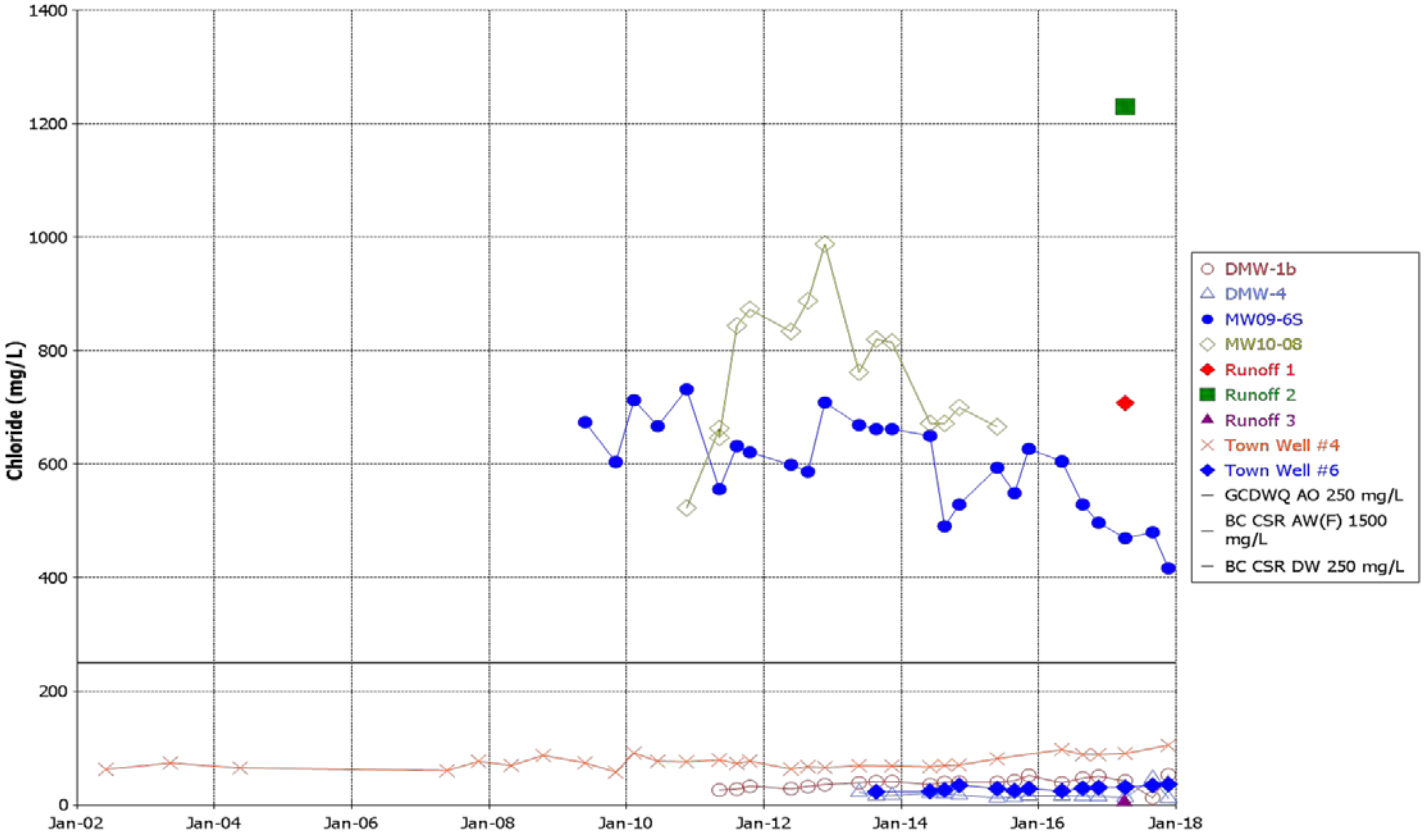
Reference

Client: CSRD
Project Number: 14-024-21
Date: April 24, 2017
Drawn by: Nathan Whitling
Checked by: Bryer Manwell

Digital data and orthophotos provided by CSRD and MOE

Coordinate System: NAD 83 UTM Zone 11

Key Map



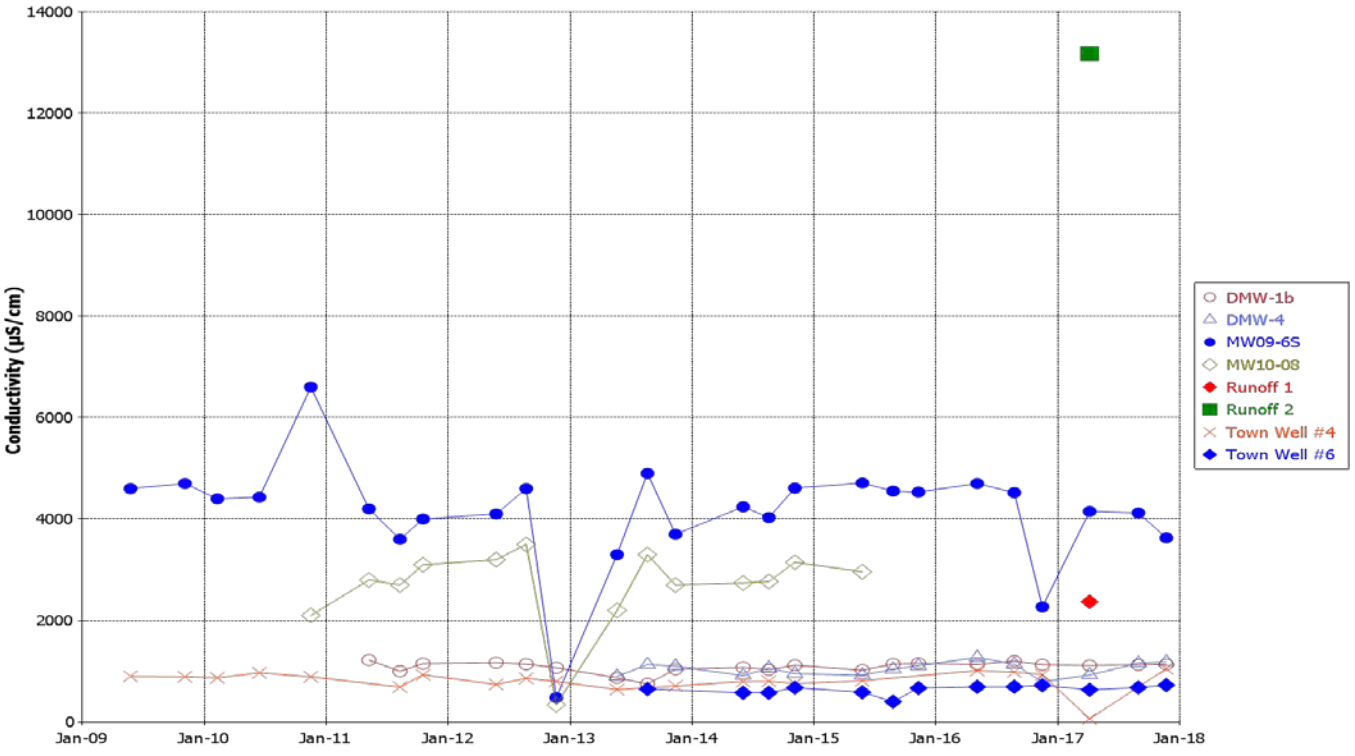


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Figure 4: Chloride (Top) and Conductivity (Bottom) Time Series Plots, Golden RDF

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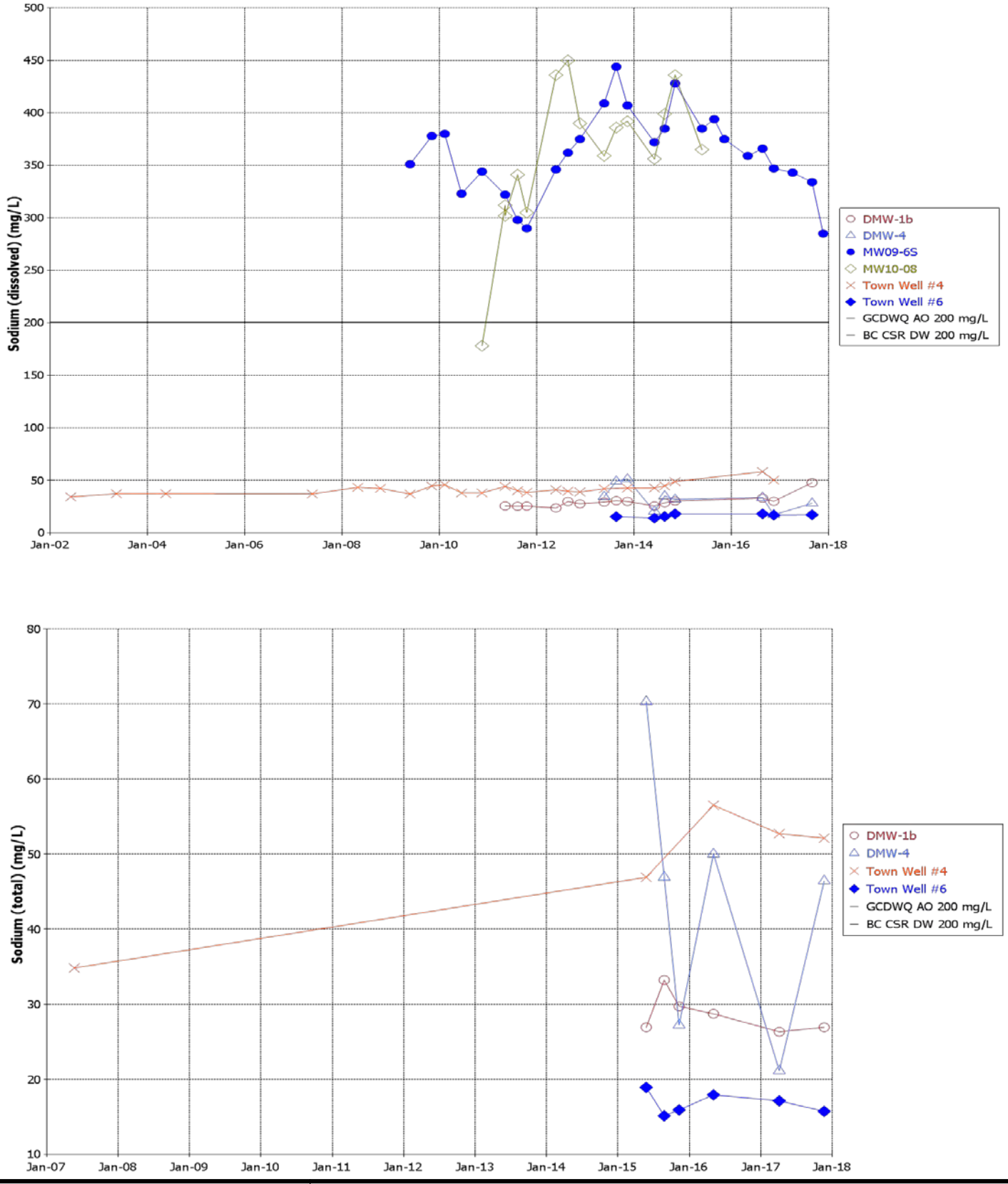
REVIEWED	DG	FILE NO.		FIGURE REV. NO.	



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TITLE

Figure 5: Dissolved Sodium (Top) and Total Sodium (Bottom) Time Series Plots, Golden RDF

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REVIEWED	DG	FILE NO.		FIGURE REV. NO.	

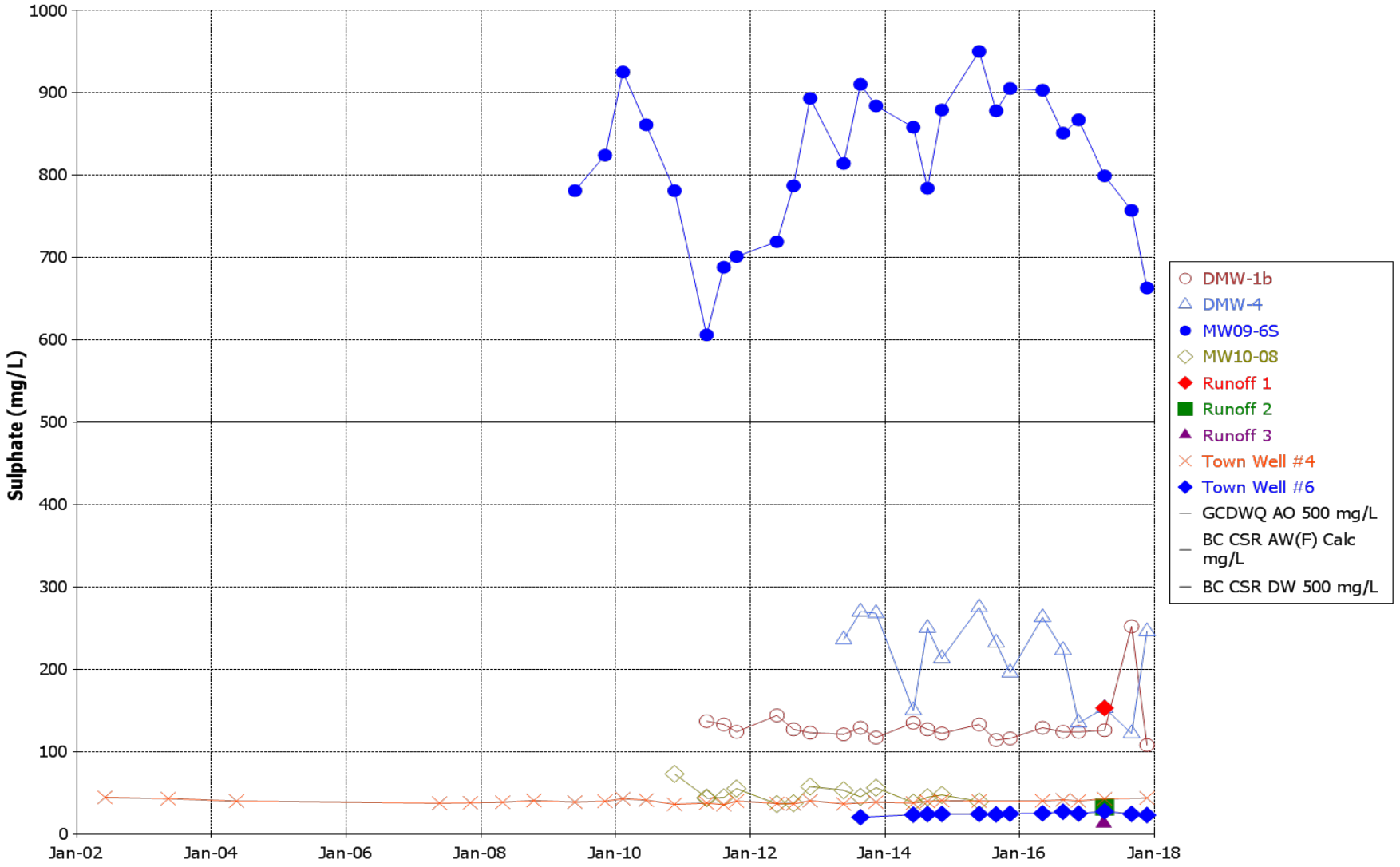

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Figure 6: Sulphate Time Series Plot, Golden RDF

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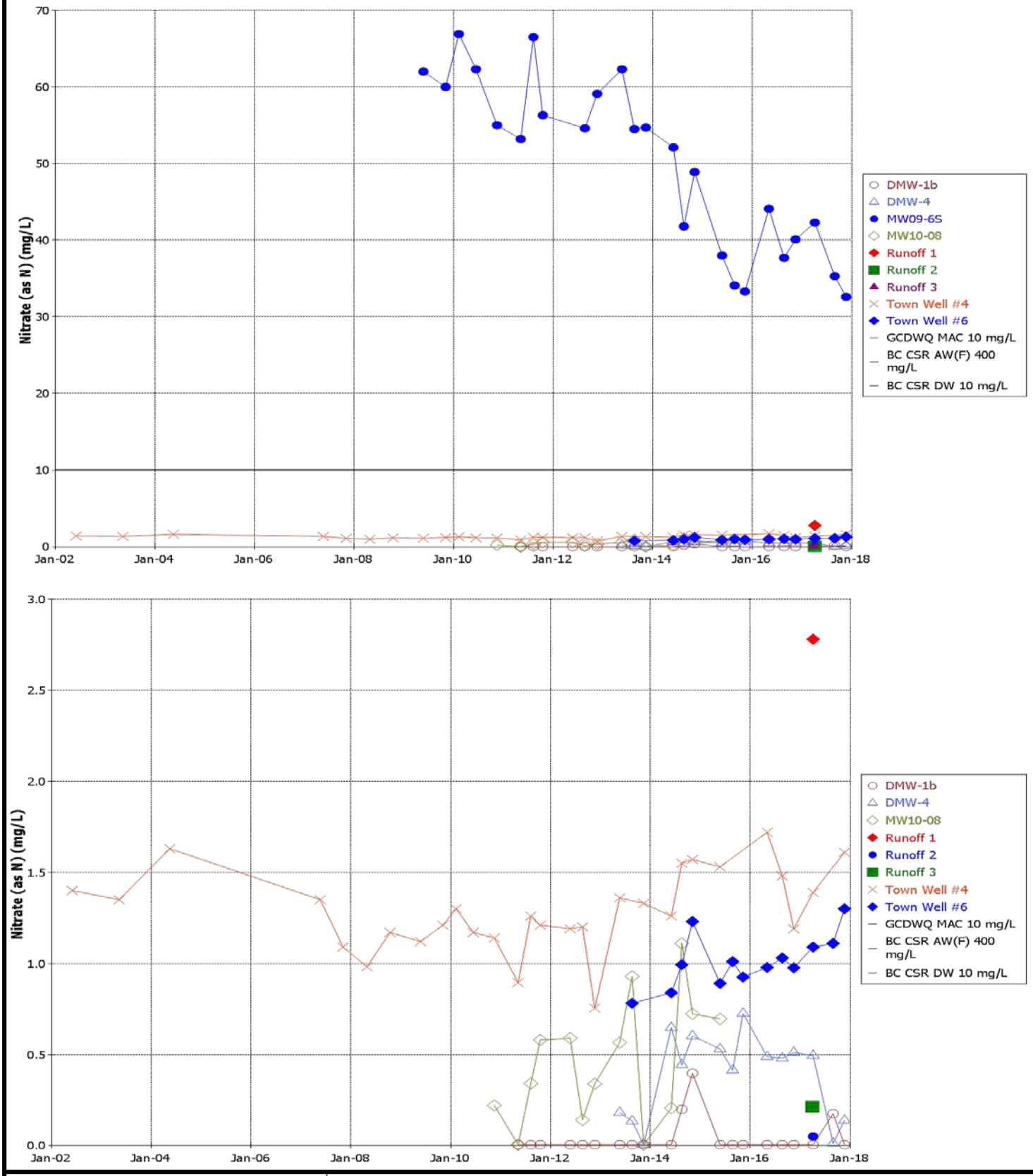

Columbia Shuswap Regional District

TITLE

Figure 7: Nitrate (Top) and Modified Nitrate (Bottom), Time Series Plots, Golden RDF

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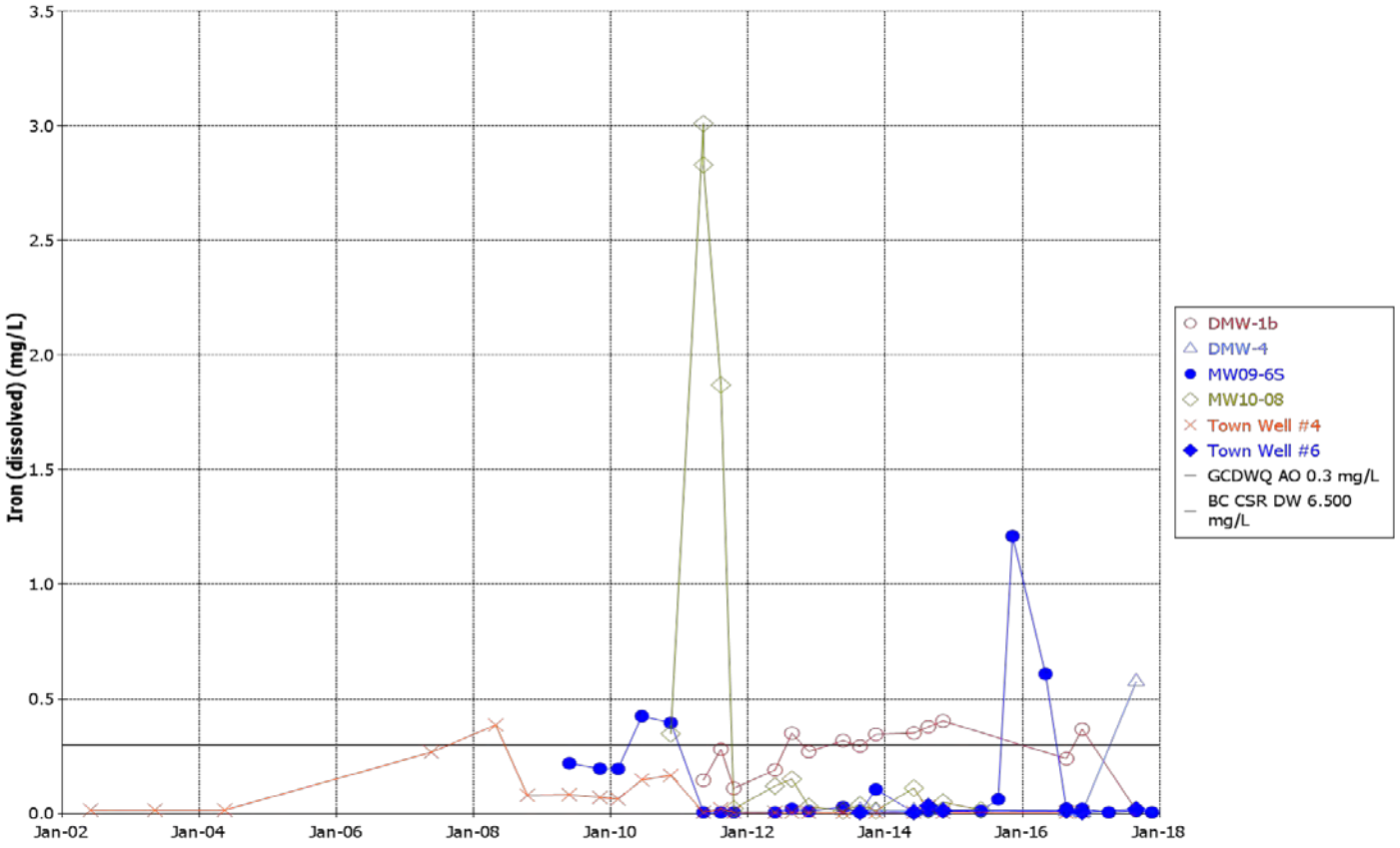
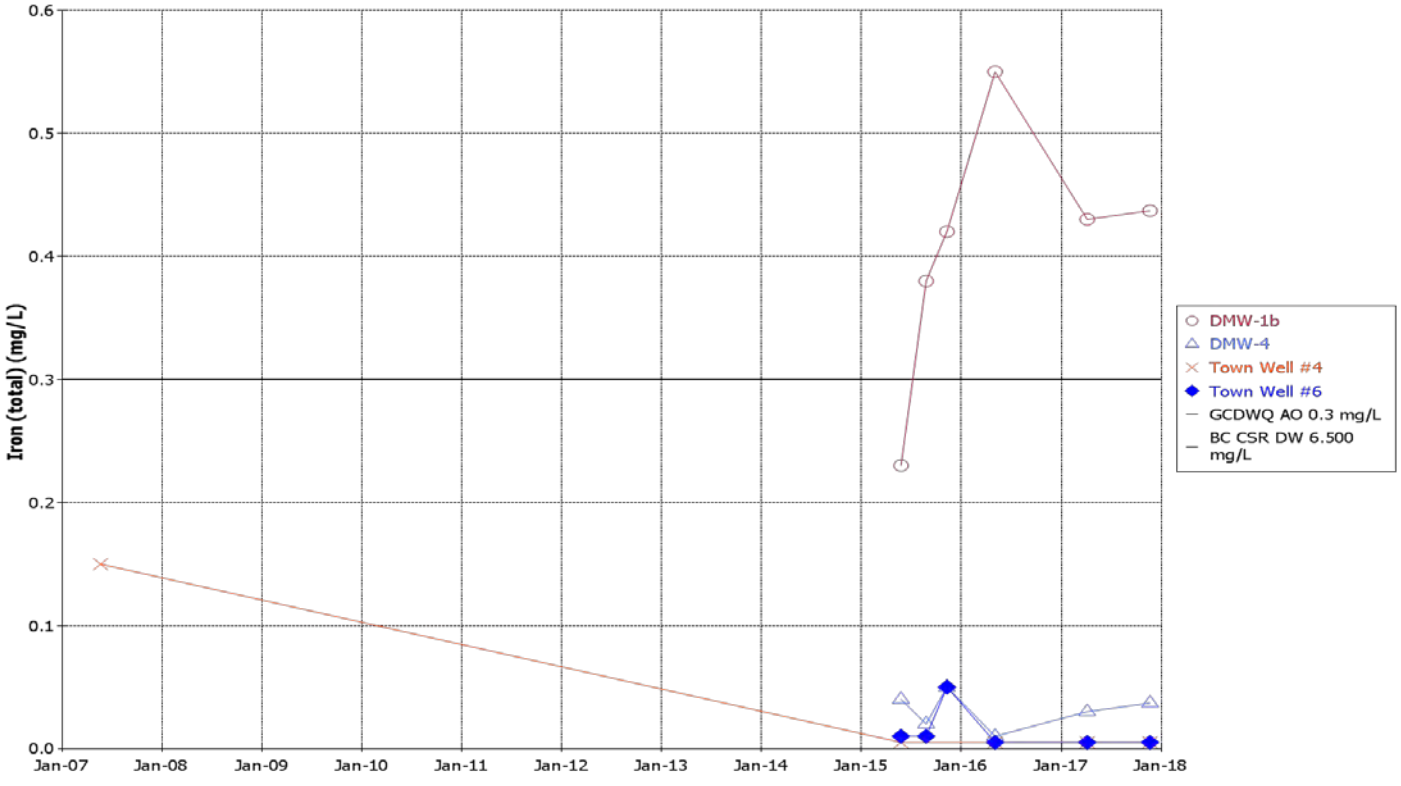




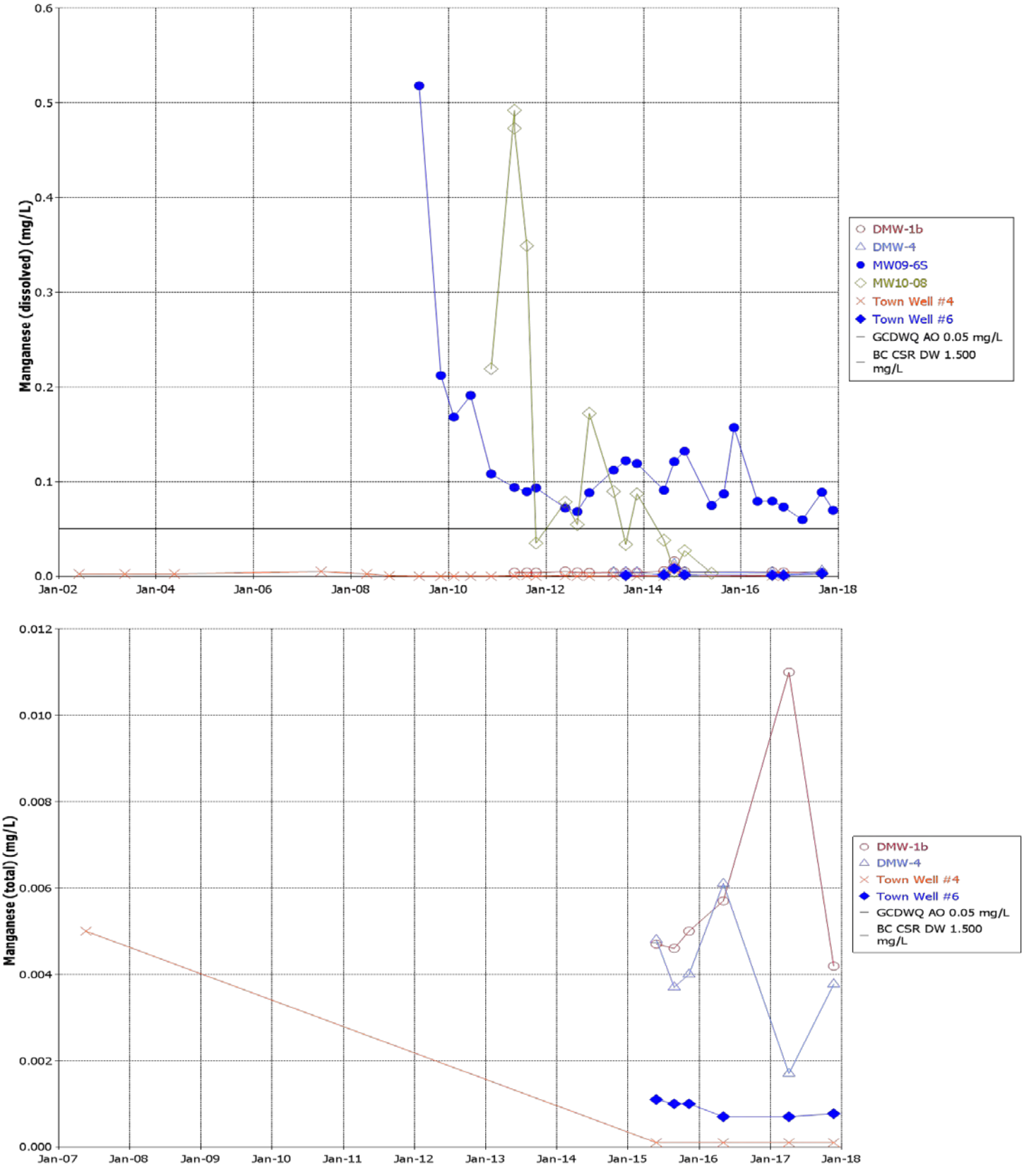
Columbia Shuswap Regional District

TITLE

Figure 8: Dissolved Iron (Top) and Total Iron (Bottom) Time Series Plots, Golden RDF

western water ASSOCIATES LTD

DRAWN	WW	DATE	February 2018	PROJECT NO.	14-024-16
CHECKED	BRM	SCALE	n/a	DWG. NO.	n/a
REVIEWED	DG	FILE NO.		FIGURE REV. NO.	



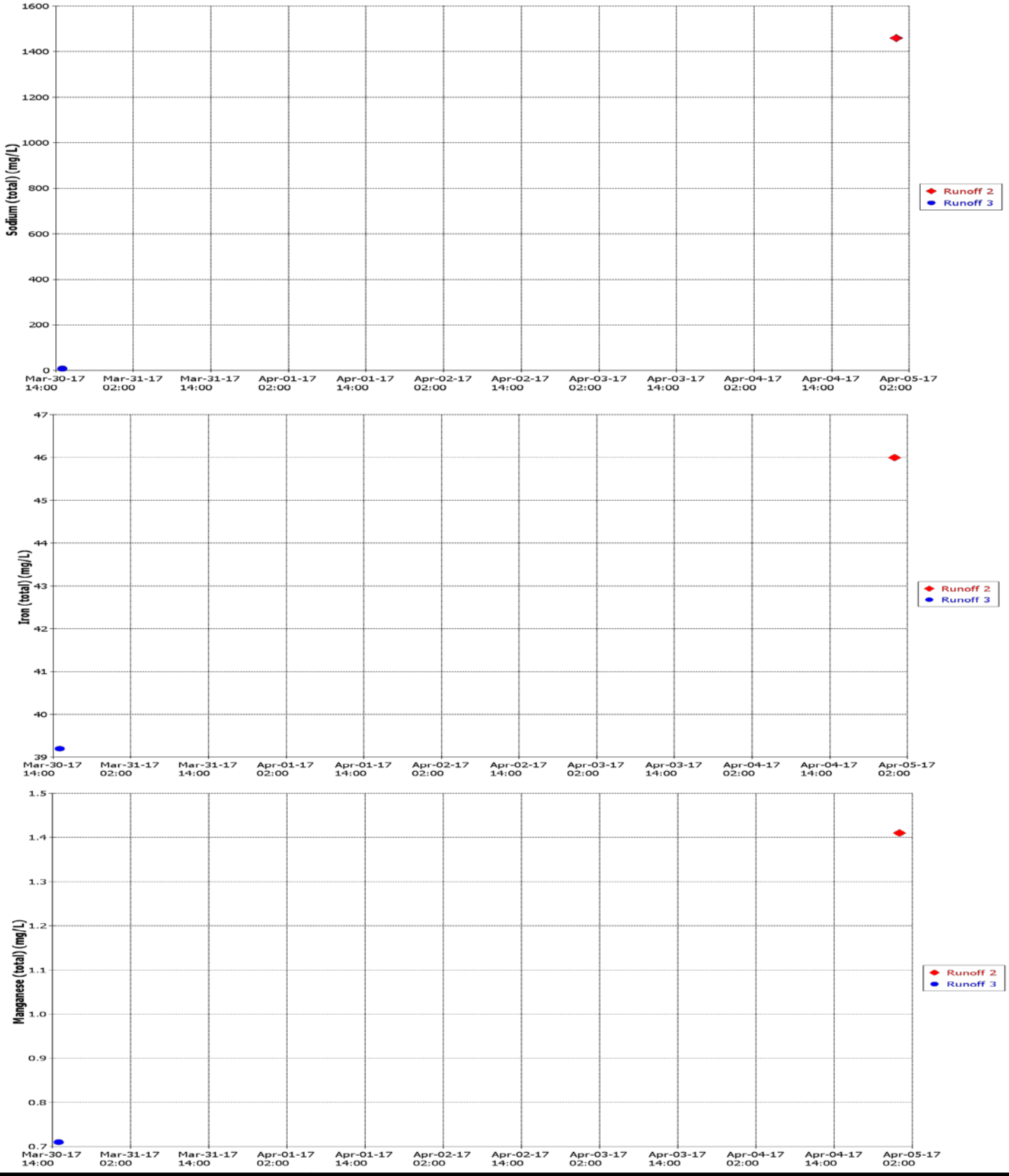
Columbia Shuswap Regional District

TITLE

Figure 9: Dissolved Manganese (Top) and Total Manganese (Bottom) Time Series Plots Golden RDF

western water ASSOCIATES LTD

DRAWN	WW	DATE	February 2018	PROJECT NO.	14-024-16
CHECKED	BRM	SCALE	n/a	DWG. NO.	n/a
REVIEWED	DG	FILE NO.		FIGURE REV. NO.	



Columbia Shuswap Regional District

TITLE

Figure 10: Total Sodium (Top), Total Iron (Middle) and Total Manganese (Bottom) for Runoff Sites at Golden RDF

western water ASSOCIATES LTD

DRAWN	WW	DATE	February 2018	PROJECT NO.	14-024-16
CHECKED	BRM	SCALE	n/a	DWG. NO.	n/a
REVIEWED	DG	FILE NO.		FIGURE REV. NO.	

Appendix A

Operational Certificate – OC 17006

August 29, 2012

Tracking Number: 243578
Authorization Number: 17006

REGISTERED MAIL

Columbia Shuswap Regional District
Box 978
781 Marine Park Drive NE
Salmon Arm, BC V1E 4P1

Dear Operational Certificate Holder:

Enclosed is Amended Operational Certificate 17006 issued under the provisions of the *Environmental Management Act*. Your attention is respectfully directed to the terms and conditions outlined in the operational certificate. An annual fee will be determined according to the Permit Fees Regulation.

This operational certificate does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the operational certificate holder. It is also the responsibility of the operational certificate holder to ensure that all activities conducted under this authorization are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force.

This decision may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

...2

Ministry of Environment
Environmental Protection Division
401 - 333 Victoria St.
Nelson, BC V1L 4K3
Southern Interior Region - Kootenay
Telephone: (250) 354-6333
Facsimile: (250) 354-6332

Administration of this operational certificate will be carried out by staff from the Southern Interior Region - Kootenay. Plans, data and reports pertinent to the operational certificate are to be submitted to the Regional Manager, Environmental Protection, at Ministry of Environment, Regional Operations, Southern Interior Region - Kootenay, 401 - 333 Victoria St., Nelson, BC V1L 4K3.

Yours truly,

Chris Stroich, M.Sc., P.Ag.
for Director, *Environmental Management Act*
Southern Interior Region - Kootenay

Enclosure

cc: Environment Canada

MINISTRY OF ENVIRONMENT

OPERATIONAL CERTIFICATE

17006

Under the Provisions of the Environmental Management Act

Columbia Shuswap Regional District

Box 978
781 Marine Park Drive NE
Salmon Arm, BC V1E 4P1

is authorized to manage waste and recyclable material from the Columbia Shuswap Regional District and environs at the Columbia Shuswap Regional District in Golden landfill located near Golden, British Columbia, subject to the conditions listed below. Contravention of any of these conditions is a violation of the *Environmental Management Act* and may result in prosecution.

This Operational Certificate supersedes all previous versions of the Operational Certificate MR-17006 issued under the authority of the *Environmental Management Act.*

1. AUTHORIZED DISCHARGE

This section applies to the discharge of refuse from municipal, commercial and light industrial sources to a sanitary landfill known as the GOLDEN LANDFILL. The site reference number for this discharge is E246600.

1.1 The authorized works are a sanitary landfill and related appurtenances approximately located as shown on the attached location map.

Date issued: May 5, 2003
Date amended: August 29, 2012
(most recent)

Chris Stroich, M.Sc., P.Ag.
for Director, *Environmental Management Act*
Southern Interior Region - Kootenay

1.2 The maximum quantity of waste discharges must not exceed the design capacity of the landfill as specified in the approved Design and Operations Plan. The final footprint and profile of the discharged waste must be within that specified in the Design and Operations Plan, and approximately as shown on the attached location map.

1.3 The authorized discharge is municipal solid waste as defined in the *Environmental Management Act* and other waste as may be authorized by the Director.

1.4 The legal description of the location of the authorized landfill facility is Subdivision 12 of Section 18, Township 27, Range 21, West of the 5th Meridian, Kootenay District.

1.5 The site is located approximately 2 kilometres travelling northeast on Highway 1 as shown on the location map.

2. DESIGN AND PERFORMANCE REQUIREMENTS

2.1 Design and Operating Plan

The Operational Certificate holder must prepare and maintain a current Design and Operations Plan prepared by a qualified professional. The Plan must be reviewed and updated as needed at least once every five years. The next update must be undertaken and completed in 2013. The Plan must address, but not be limited to, each of the subsections in the Landfill Criteria for Municipal Solid Waste including performance, siting, design, operational, closure and post-closure criteria. The facilities must be developed, operated and closed in accordance with the Plan. Should there be any inconsistency between this Operational Certificate and the Plan, this Operational Certificate must take precedence.

Written authorization from the Director must be obtained prior to implementing any changes to the approved plans. Based on any information obtained in connection with this facility, the Director may require revision of, or addition to, the design, operating and closure plans.

Date issued: May 5, 2003
Date amended: August 29, 2012
(most recent)

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for Director, *Environmental Management Act*
Southern Interior Region - Kootenay

2.2 Qualified Professionals

All facilities and information, including works, plans, assessments, monitoring, investigations, surveys, programs and reports, must be certified by Qualified Professionals.

2.3 Maintenance of Works and Emergency Procedures

The authorized works must be inspected regularly and maintained in good working order. In the event of an emergency or condition beyond the control of the Columbia Shuswap Regional District including, but not limited to, unauthorized fires arising from spontaneous combustion or other causes, or detection of surfacing leachate on the property, the Columbia Shuswap Regional District must take appropriate remedial action and notify the Regional Office. The Director may reduce or suspend operations to protect the environment until the authorized works has been restored, and/or corrective steps taken to prevent unauthorized discharges.

2.4 Additional Facilities or Works

The Director may require investigations, surveys, and the construction of additional facilities or works. The Director may also amend any information requirements of this Operational Certificate including plans, programs, monitoring, assessments and reports.

2.5 Public Health, Safety and Nuisance

The landfill must be operated in a manner such that it will not create a public nuisance or become a significant threat to public health or safety with respect to landfill gas, unauthorized access, roads, traffic, airport activity, noise, dust, litter, vectors, or wildlife attraction.

2.6 Ground and Surface Water Quality Impairment

The landfill must be operated in a manner such that ground or surface water quality does not decrease beyond that specified by the British Columbia Water Quality Guidelines, or other appropriate criteria as may be specified by the Director, at or beyond the landfill property boundary.

Date issued: May 5, 2003
Date amended: August 29, 2012
(most recent)

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for Director, *Environmental Management Act*
Southern Interior Region - Kootenay

The certificate holder must take all reasonable measures to ensure that BCWQG are met at or beyond the property boundary. These measures include but are not limited to:

a) Prohibiting the discharge of municipal solid waste into water.

b) Ensuring that no new waste is landfilled within 1.2 m of the highest groundwater level.

c) Ensuring that adequate surface water and groundwater diversion works are constructed and maintained to minimize surface water run-off and groundwater seepage from entering the landfill.

d) Ensuring that the management systems for surface water that has not come in contact with waste are hydraulically separate from those for managing impacted surface water.

e) Ensuring that the landfill is operated in a manner that prevents the exceedance in surface water and groundwater of anticipated leachate indicators or parameters distinctive of leachate or those specified by the Director at the landfill boundary.

f) Ensuring that the indicators in e) above, at specified groundwater monitoring wells within the property boundary are in accordance with those predicted by design and that suitable measures are taken to address the cause of any exceedances above the trigger levels identified in the most current Design and Operations Plan.

g) Ensuring that the landfill is operated in accordance with a Design & Operations Plan which specifies measures to prevent decreases in groundwater and surface water quality at and beyond the property boundary.

If exceedances to the specified water quality criteria occur as a result of landfill operations, the Director may require that leachate management control measures or works be undertaken. Terms of reference for any leachate management study and/or design work must be submitted to the Director for review prior to conducting the work.

Date issued: May 5, 2003
Date amended: August 29, 2012
(most recent)

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for Director, *Environmental Management Act*
Southern Interior Region - Kootenay

2.7 Landfill Gas Management

The Landfill must not cause combustible gas concentrations to exceed the lower explosive limit in soils at the property boundary or 25% of the lower explosive limit at or in on-site or off-site structures.

The Operational Certificate holder must ensure that the facility is in compliance with the requirements of the Landfill Gas Management Regulation under the *Greenhouse Gas Reduction (Emissions Standards) Statutes Amendment Act*, 2008 on or before applicable dates specified in the regulation. The requirements of the regulation and its guideline documents must be incorporated by the Operational Certificate holder into the Design and Operation Plan revisions as they come into effect and as applicable.

2.8 Buffer Zone

No material must be landfilled within 50 metres of the property boundary.

3. OPERATIONAL REQUIREMENTS

3.1 Waste Compaction and Coverage

The Operational Certificate holder must ensure that waste deposition and compaction meets or exceeds the requirements of the BC Landfill Criteria or its most current version for daily, intermediate and final cover. Control must be exercised to ensure keeping freshly deposited refuse in a well defined and small / manageable working face.

3.2 Prohibited Wastes

The disposal of the following types of wastes is strictly prohibited:

(a) Hazardous Wastes other than those specifically approved for disposal to authorized landfills in the Hazardous Waste Regulation under the *Environmental Management Act*.

(b) Biomedical wastes as defined in the Guidelines for the Management of Biomedical Wastes in Canada (Canadian Council of Ministers of the Environment, February 1992),

Date issued: May 5, 2003
Date amended: August 29, 2012
(most recent)

Chris Stroich, M.Sc., P.Ag.
for Director, *Environmental Management Act*
Southern Interior Region - Kootenay

(c) Bulk liquids and semi-solid wastes, which contain free liquids, as determined by US EPA Method 90954 Paint Filter Liquids Test, Test Methods for Evaluating Solid Wastes-Physical/Chemical Methods (EPA Publication No. Sw-846),

(d) Release of ozone depleting substances from the storage, handling and disposal of used appliances, equipment, or any material containing ozone depleting substances is prohibited in accordance with the requirements of the Ozone Depleting Substances Regulation. Onsite removal or evacuation of Ozone Depleting Substances (ODS) from appliances and the subsequent storage of appliances on site is permitted subject to both activities being in compliance with the Ozone Depleting Substances Regulation.

3.3 Waste Asbestos

Waste asbestos is authorized for disposal subject to compliance with the requirements of section 40 of the Hazardous Waste Regulation and the following conditions:

(a) The asbestos waste may not be mixed with any other hazardous waste.

(b) The Regional District must approve the disposal before disposal takes place.

(c) All other applicable requirements of the Hazardous Waste Regulation, including but not limited to manifesting and waste record keeping, must also be complied with.

3.4 Contaminated Soil

Soil that contains contaminants in concentrations less than "hazardous waste" as defined by the Hazardous Waste Regulation may be disposed of at the landfill site. Disposal includes monofilling, co-disposal with other wastes, use as a refuse cell berm material and use as a refuse cell cover material. Disposal does not include use as final cover material.

3.5 Wildlife and Vector Control

Vectors (carriers capable of transmitting a pathogen from one organism to another including, but not limited to flies and other insects, rodents, and birds) must be controlled by the application of cover material at the required frequency or by such additional methods as specified by the Director. Wildlife control fencing must be maintained around the perimeter of the landfill site and must be

electrified for at least the active bear season of each year.

This landfill must be operated so as to minimize the attraction of wildlife such as bears and birds by applying cover at required frequencies and instituting a good housekeeping program.

3.6 Site Access and Supervision

A landfill operator that has received BC Qualified Landfill Operator training, is familiar with the requirements of the Operational Certificate and the specifications of the Design and Operations Plan, must be present at all times during operating hours.

Locking gates must be maintained at all access routes to the landfill site. Gates, perimeter fencing and/or barriers must be installed where necessary to prevent unauthorized access to the site by vehicles. Gates must be locked during non-operating hours.

3.7 Dust Control

Dust created within the landfill property must be controlled, using methods and materials acceptable to the Director, such that it does not cause a public nuisance.

3.8 Litter Control

The best practical means must be used to prevent the scatter of litter. Any litter scattered into the neighbouring property, along access roads, in drainage ditches, along litter-control fences, into surrounding trees or elsewhere on the landfill site must be cleaned up. The frequency of clean up and other additional requirements for refuse scatter control must be determined by the Director.

3.9 Waste Reduction and Alternate Disposal

The Provincial Government has developed policies to promote the reduction, reuse and recycling of wastes. The Operational Certificate holder is encouraged to segregate for recycling and reuse, where possible, materials destined for disposal at this site.

Public scavenging must not be permitted at the landfill. The controlled salvaging of waste by the landfill operator or persons authorized by the

Operational Certificate holder is encouraged if areas or facilities for separation and storage of recyclable or reusable materials are provided.

In certain landfill environments, some construction and demolition debris or other wastes may create specific air and water quality concerns. If problems arise at this site that are attributable to specific wastes, the Director may require that alternate disposal/storage procedures be implemented.

3.10 Operations and Maintenance Manual

The Operational Certificate holder must prepare an Operations and Maintenance Manual to be reviewed and updated as necessary on at least an annual basis.

4. MONITORING AND REPORTING REQUIREMENTS

4.1 Landfill Monitoring

A monitoring program must be developed by a Qualified Professional and identify potential environmental impacts of the authorized facility and must address but not be limited to the Landfill Criteria for Municipal Solid Waste and Guidelines for Environmental Monitoring. The monitoring program must be updated every five years and submitted to the satisfaction of the Director. The next monitoring plan update is required to be undertaken and completed in 2013. Monitoring must be conducted in accordance with the monitoring program.

The program must be designed to assess and identify:

- The design performance of the landfill as per the Design & Operations Plan including but not limited to compliance with water quality performance standards at the landfill boundary.
- Landfill leachate as a contaminant source.
- Residential well water quality.
- Surface water quality.

The monitoring program must address, but not be limited to relevant sections of the Landfill Criteria for Municipal Solid Waste and the Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills. The Environmental Monitoring Program must take into consideration results from previous monitoring programs and any other investigations conducted at the site to ensure that early detection of potential impacts is possible.

4.2 Sampling Techniques

Sampling must be carried out in accordance with the procedures described in the most recent edition of the "British Columbia Field Sampling Manual for Continuous Monitoring Plus the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples", or by suitable alternative procedures as authorized by the Director. A copy of the above manual may be purchased from the Queen's Printer Publications Centre, P.O. Box 9452, Stn. Prov. Gov't., Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or (250) 387-6409).

4.3 Analysis

Analyses must be carried out in accordance with procedures described in the most recent edition of the "British Columbia Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Materials", or by suitable alternative procedures as authorized by the Director. A copy of the above manual may be purchased from the Queen's Printer Publication Centre.

4.4 Quality Assurance

The Operational Certificate holder must produce, within 60 days on the request of the Regional Manager Environmental Protection, 'Field and Laboratory Quality Protocols and Quality Assurance Criteria' acceptable to the Director. The 'Laboratory Quality Protocols' must include the procedures used to assess precision, accuracy and blank quality, including frequency of application of those procedures, the procedures for sampling, handling (e.g. preservation, hold times) and corrective measures to be initiated when deficiencies are indicated. The 'Quality Assurance Criteria' must include the acceptance criteria for accuracy (based on recoveries for reference samples/spikes), for precision (based on deviation in field and lab duplicates) and method blanks (designed to indicate false positives).

5. LANDFILL REPORTING

5.1 Annual Report

The Operation Certificate Holder must submit an Annual Report to the Director on or before April 30th each year for the previous calendar year. The report must contain at least the following information:

Date issued: May 5, 2003
Date amended: August 29, 2012
(most recent)

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for Director, *Environmental Management Act*
Southern Interior Region - Kootenay

(a) an executive summary;

(b) the type and tonnage of waste received, recycled, stored on-site and discharged / landfilled for the year;

(c) Any proposed changes to the Design and Operations Plan and the environmental monitoring program (EMP), with rationale for the changes; a description of unanticipated occurrences and any changes to the closure or post-closure plans and funds;

(d) A review of the preceding year of operation or an operations update which summarizes landfill development work completed in the subject reporting year and work planned for the subsequent year. A summary of any new information or changes to the facilities and plans, assessments, surveys, programs and reports;

(e) Occurrences or observations of wildlife (medium and large carnivores) at the facility;

(f) A statement regarding the facility's progress in reducing the regional solid waste stream being landfilled and the objectives of the Regional Solid Waste Management Plan;

(g) An outline of the current Environmental Monitoring Program and a compendium of all environmental monitoring data in accordance with requirements specified in the most recent version of Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills and Landfill Criteria for Municipal Solid Waste. The annual report must document any effect of the discharge on the quality of the receiving environment using appropriate statistical and graphical analysis. Trend analyses, as well as an evaluation of the impacts of the discharges on the receiving environment must be included;

(h) A list of training programs completed for landfill operators during the previous year; and

(i) Any additional information requested by the Director.

All reports must be submitted, suitably formatted and tabulated in both print and electronic format (portable document format).

Date issued: May 5, 2003
Date amended: August 29, 2012
(most recent)

Chris Stroich, M.Sc., P.Ag.
for Director, *Environmental Management Act*
Southern Interior Region - Kootenay

5.2 Five Year Report

The Operation Certificate Holder must submit a Five Year Report to the Director on or before April 30th on the five year anniversary of the last submission. The next report is due by the end of 2013. The report must contain at least the following information:

(a) An executive summary;

(b) An updated Design and Operations Plan;

(c) A detailed hydrogeological assessment;

(d) The type and tonnage of waste received, recycled, stored on-site and discharged / landfilled for the year;

(e) A current topographic map detailing airspace consumption, on-site borrow pit changes and future developments;

(f) Volume and density analysis or an in-place material summary, updated estimates for the remaining capacity, site life, revised closure date for the current phase or sequence and revised closure date for the current landfill footprint;

(g) An outline of the current Environmental Monitoring Program and a compendium of all environmental monitoring data in accordance with requirements specified in the most recent version of Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills and Landfill Criteria for Municipal Solid Waste. The annual report must document any effect of the discharge on the quality of the receiving environment using appropriate statistical and graphical analysis. Trend analyses, as well as an evaluation of the impacts of the discharges on the receiving environment must be included;

(h) An update on the financial assurance mechanism including a statement of the current dollar value of the Closure Fund and the amount earmarked for the Landfill site; and

(i) Any additional information requested by the Director.

Date issued: May 5, 2003
Date amended: August 29, 2012
(most recent)

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for Director, *Environmental Management Act*
Southern Interior Region - Kootenay

6. LANDFILL CLOSURE PLAN

6.1 Closure Plan and Post Closure

The Operational Certificate holder must perform closure and post-closure care in accordance with all applicable requirements of the BC Landfill Criteria for Municipal Solid Waste. This Operational Certificate is issued on the condition that a Closure Plan and Final Cover Design that meets or exceeds the requirements of the criteria will be submitted to the Director during the operating life of the landfill. The Closure Plan must be reviewed every five years throughout the operating life of the landfill.

A certification by a Qualified Professional attesting that all closure works have been completed in accordance with the Closure Plan and Final Cover Design is to be submitted to the Director no later than 60 days after the implementation of the Final Cover Design.

The Operational Certificate Holder must submit a Post Closure or Aftercare Plan to the Ministry at least two years prior to the anticipated closure date of the landfill.

6.2 Closure Fund

The Operational Certificate holder must provide for the funding of progressive closure operations, final closure and operations beyond closure by maintaining a closure fund. The value of the closure fund must meet or exceed the estimated closure and post-closure costs as established in the approved Design and Operations Plan and updated in the annual report, plus a reasonable contingency for any remediation which may be required. Reported costs must be adjusted for inflation annually. Alternately, a closure and post-closure financial security acceptable to the Director may be built over time.

The Operational Certificate holder must determine and ensure that the closure fund is adequate by preparing annually a financial statement of the fund which must be made available to the Director upon request. The financial statement must report the accrued capital, interest and additions to the fund for the previous year and review the sufficiency of the fund and the rate of accrual in consideration of the projected costs of closure and post-closure obligations.

Date issued: May 5, 2003
Date amended: August 29, 2012
(most recent)

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for Director, *Environmental Management Act*
Southern Interior Region - Kootenay

6.3 Site Decommissioning

In accordance with Section 40 of the *Environmental Management Act* and Part 2 of the Contaminated Sites Regulation, the Operational Certificate holder must submit a site profile to the manager at least ten days prior to decommissioning the facilities authorized in Section 1.

6.4 Declaration of Landfill

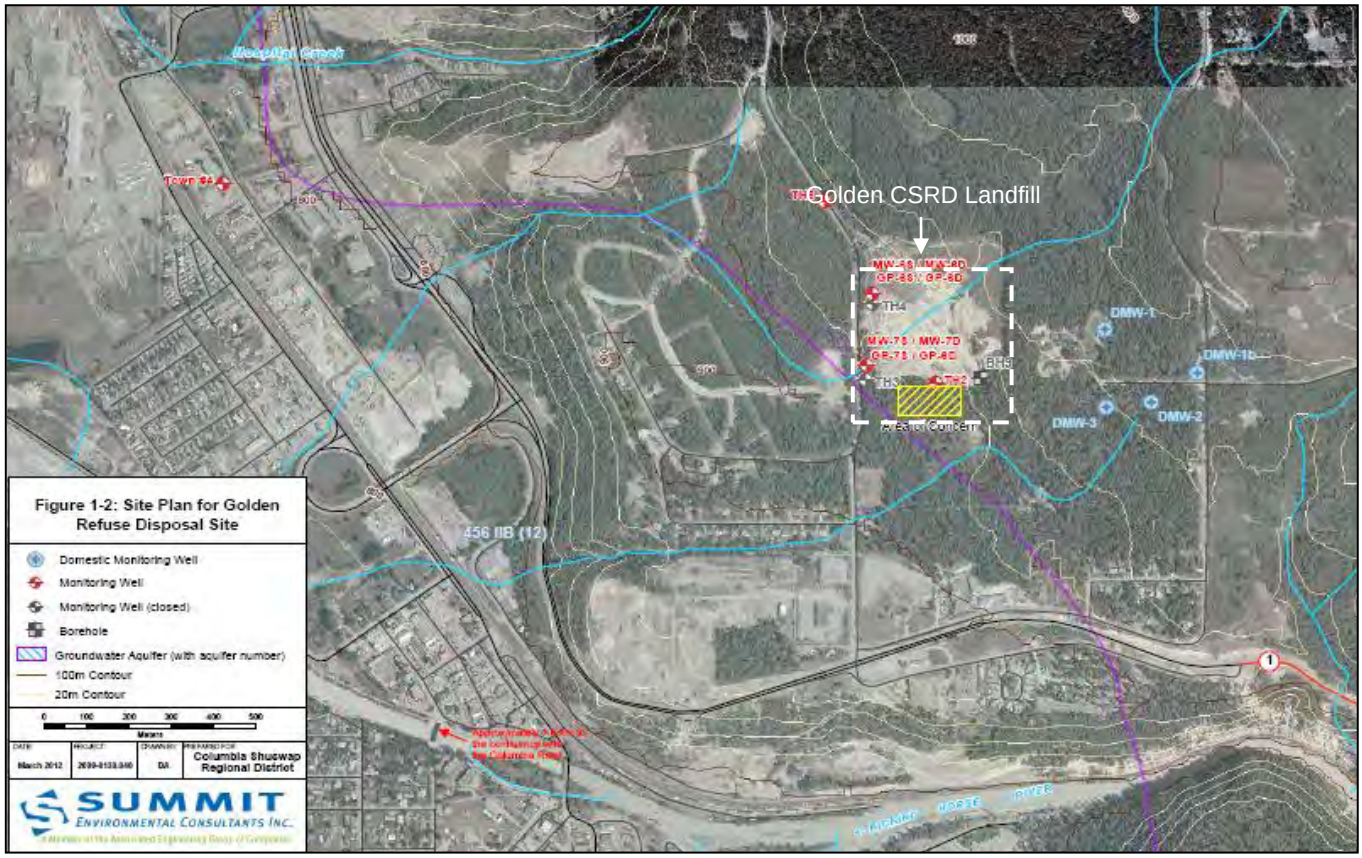
Landfills sited on titled land must register a covenant that the property was used for the purpose of waste disposal as a charge against the title to the property as provided for under Section 215.1 of the *Land Title Act.* Landfills located on crown land are to have a "notation on file" registered that the property was used for the purpose of waste disposal.

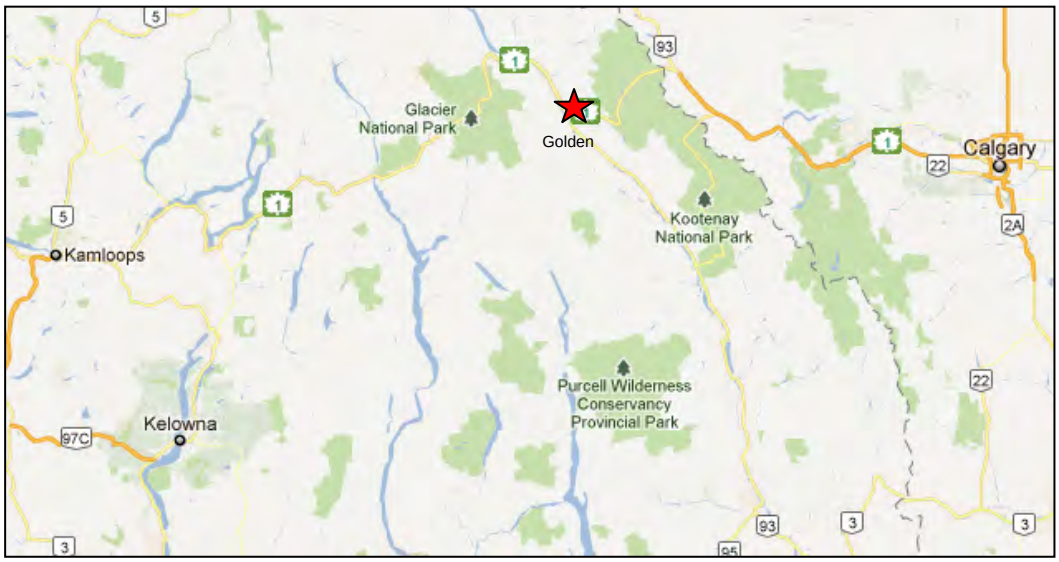
The Operational Certificate holder must, upon closure of the landfill, register a charge against the property title, or provide other legal notification acceptable to the Director that the property described in Section 1 was used for the purpose of waste disposal. The Director must be notified of the charge or legal notification.

Date issued: May 5, 2003
Date amended: August 29, 2012
(most recent)

Chris Stroich, M.Sc., P.Ag.
for Director, *Environmental Management Act*
Southern Interior Region - Kootenay

Location Map





Date issued: May 5, 2003
Date amended: August 29, 2012
(most recent)

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for Director, *Environmental Management Act*
Southern Interior Region - Kootenay

Appendix B

Well Logs

Symbol Legend

Common Symbols

 Sand

 Silty Sand

 Sandy Silt

 Clayey Sand

 Sand and Gravel

 Gravel

 Silt

 Clayey Silt

 Clay

 Silty Clay

 Sandy Silty Clay

 Silty Sand and Gravel

 Silty Gravel

 Silty Clay and Gravel

 Topsoil

 Peat

 Limestone

 Shale

Well Symbols

Pipe and Screen

NONE None

 Pipe

 Double Walled Pipe

 Sealed Pipe

 Fine Screen

 Coarse Screen

 Slotted Screen

 Slotted Screen

Top Fittings

NONE None

 Cap

 Flush-mounted Cap

 Above-ground Cap

 Connector

 Reducer

 Pipe Break

 Packer

Bottom Fittings

NONE None

 Cap

 Cone

 Screw-on Cap

 Connector

 Enlarger

 Pipe Break

 Packer

Packing and Backfill

NONE None

 Bentonite

 Clay

 Silt

 Cement

 Sand

 Sand and Gravel

 Gravel

Project No: **7130-010.01**

Client: **CSRD**

Location: **Golden, BC**

Logged by/ Checked by: **BRM/ MG**

Test Hole / Borehole I.D.: TH-6 (6")

Well I.D.: **MW-6S, MW-6D, GP-6S, GP-6D**

Location on site: **near weight scale (replaces TH4)**

Northing/ Easting/ Elevation: **0**

SUBSURFACE PROFILE			SAMPLE				
Depth (ft / m)	Symbol	Description	Type	I.D.	Flag for analysis	Well Details	Well Completion Details / Remarks
0 ft / 0 m		Ground Surface					
10 ft		Light brown, GRAVEL, w. sand, loose, dry					
30 ft / 10 m		Light brown, SILT w/ sand, trace gravel, loose, dry					
40 ft		Grey, GRAVEL w/ sand and silt, loose, dry					
50 ft		Grey, GRAVEL w/ sand and silt, loose, dry					
60 ft / 20 m		Note: larger gravel than above					
70 ft		Light brown, (f.) SAND w/ silt and trace gravel, dense, moist					
80 ft		Grey, (m.) SAND, w/ silt and gravel, dense, moist					
90 ft		Grey, cemented GRAVEL, dense, dry					
100 ft / 30 m		Yellow, SILT w/ some angular gravel and m.-c. sand, dense, moist					
110 ft		Black, Limestone bedrock					
120 ft							
130 ft / 40 m							
140 ft							
150 ft							
160 ft / 50 m							
170 ft							
180 ft							
190 ft / 60 m							
200 ft							
210 ft							
220 ft		End of Borehole					

Configuration:

- Two groundwater monitoring wells (each 2" diameter)
- Two gas monitoring probes (each 1" diameter)
- Schedule 40 PVC
- Gas piezos. are threaded
- 20/40 sand pack around each monitoring well

Screen Assembly:

- No. 10 slot PVC

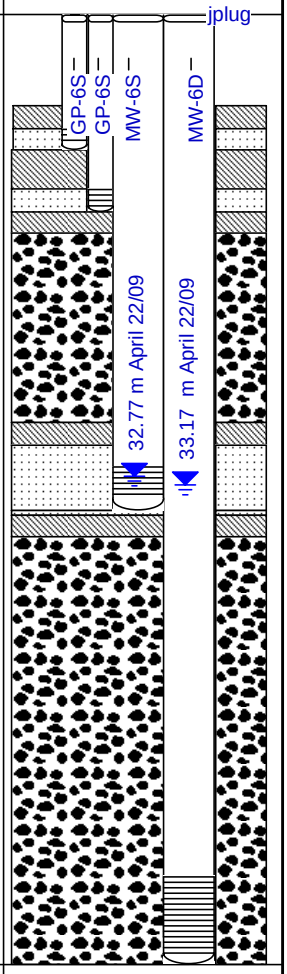
MW6D
-Screened in bedrock - Screened btw 59.76 m (196 ft) and 65.85 (216 ft) bgs

MW6S
-Screened in surficial deposits (overburden)
-Screened btw 31.40 m (103 ft) and 34.45 m (113 ft) bgs

GP6D
-Screened btw 12.20 m (40 ft) and 16.77 m (55 ft) bgs

GP6S
-Screened btw 7.93 m (26 ft) and 9.45 m (31 ft) bgs

Casing height =



SUMMIT ENVIRONMENTAL CONSULTANTS LTD.

Contractor: JR Drilling Central Ltd.
Operator(s): Jerry Opper
Drill Method: Dual Air Rotary
Ground conditions: bare

Date: April 20, 2009
Time:
Temperature: 10 degC
Sheet: 1 of 1

Project No: **7130-010.01**

Client: **CSRD**

Location: **Golden, BC**

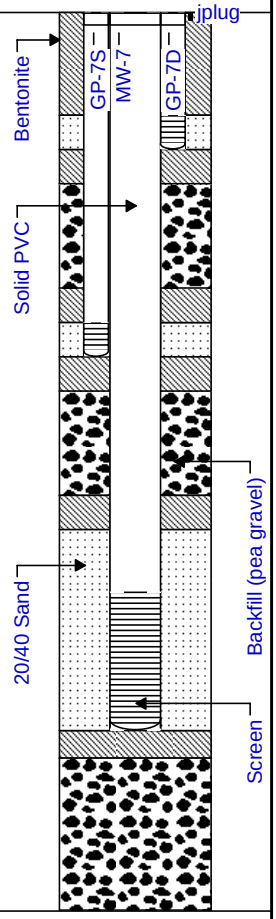
Logged by/ Checked by: **BRM/ MG**

Test Hole / Borehole I.D.: TH-7 (6")

Well I.D.: **MW-7, GP-7S, GP-7D (replaces TH3)**

Location on site: **Golden-Donald Upper Rd.**

Northing/ Easting/ Elevation: **0**

SUBSURFACE PROFILE			SAMPLE				
Depth	Symbol	Description	Type	I.D.	Flag for analysis	Well Details	Well Completion Details / Remarks
0 ft / 0 m		Ground Surface					
		Yellow/ brown, SILT, loose, damp				Configuration: ♦ One groundwater monitoring well (2" diameter) ♦ Two gas monitoring probes (each 1" diameter) ♦ Schedule 40 PVC ♦ Gas probes are threaded ♦ 20/40 sand pack around each monitoring well Screen Assembly: - No. 10 slot PVC **MW-7** -Screened in the surficial deposits (overburden) -Screened btw 25.6 m (84 ft) and 31.7 m (104 ft) bgs **GP-7D** -Screened btw 13.72 m (45 ft) and 15.24 m (50 ft) bgs **GP-7S** -Screened btw 4.5 m (15 ft) and 6.10 m (20 ft) bgs Casing Height: 1.2 m (3.9 ft)	
10							
20		Grey, SILTand clay, dense, moist					
		Grey, SILT, dense, moist					
30 / 10							
40		Light brown, SILT w/ (f.) sand and gravel, loose, moist, fining upwards					
50							
60		Grey, cemented GRAVEL w/ sand and silt, dense, damp					
70 / 20		Grey, SILT trace sand, dense, moist					
80		Grey, GRAVEL w/ (m.) sand and silt, dense, moist					
90		Grey, (f.-m.) SAND w/ silt, dense, moist, coarsening upward					
100 / 30							
110		Grey, cemented GRAVEL, dense, dry					
120		Grey, (f.) angular GRAVEL w/ sand and silt, dense, dry,					
130 / 40							
140		End of Borehole					

SUMMIT ENVIRONMENTAL CONSULTANTS LTD.

Contractor: JR Drilling Central Ltd.

Operator(s): Jerry Opper

Drill Method: Dual Air Rotary

Ground conditions: bare

Date: April 23, 2009

Time:

Temperature: 7 deg C

Sheet: 1 of 1

Project No: **7130-010.01**

Client: **CSRD**

Location: **Golden, BC**

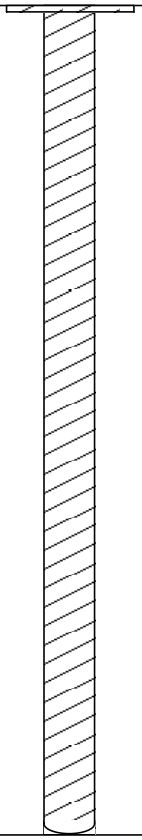
Logged by/ Checked by: **BRM/ MG**

Test Hole / Borehole I.D.: TH3

Well I.D.: **TH-3 (well closure)**

Location on site: **on Golden-Donald Upper Rd**

Northing/ Easting/ Elevation: **0**

SUBSURFACE PROFILE			SAMPLE				
Depth	Symbol	Description	Type	I.D.	Flag for analysis	Well Details	Well Completion Details / Remarks
0 ft / 0 m		Ground Surface					
10 ft / 10 m						TH-3 was replaced by MW-7. TH-3 was decommissioned according to the Groundwater Protection Regulation. The surface casing was removed, the 2" piezometer was cut approximately 4" below ground surface and bentonite chips were poured into the casing. Bentonite was poured around the outer annulus of the piezometer to bring the hole to ground surface.	
20 ft / 20 m							
30 ft / 10 m							
40 ft							
50 ft							
60 ft		End of Borehole					
70 ft / 20 m							

SUMMIT ENVIRONMENTAL CONSULTANTS LTD.

Contractor: JR Drilling

Operator(s): Jerry

Drill Method:

Ground conditions: bare

Date: April 20, 2009

Time:

Temperature: 10 degC

Sheet: 1 of 1

KALA GROUNDWATER CONSULTING LTD. **TESTHOLE LOG**

CLIENT:	RCP	PROJECT:	Hydrogeologial	TESTHOLE:	BH95-03
LOCATION:	Golden Landfill		Assessment - Golden BC	PROJECT NO:	KE95-057
DRILL RIG:	Becker Hammer	SURF ELV:	908.5m ASL.	CO-ORDINATES:	

DEPTH (m) ELV. (m)	INDEX: METHANE %	Plot	SOIL DESCRIPTION	Lab Test	SAMPLES		COMPLETION DETAILS
	0 5 10 15 20						
Gravel					Depth (m)	N	Stickup 1.2m
	0-8.54		**Silt**-some fine sand, some gravel, fine to coarse, iso. cobbles, non-plastic, red/brown, dense, damp		AR1 1.5		50mm dia. Solid pipe
2.0 906.5							Bentonite Grout
					AR2 3.0		
					D1 3.5/3.95	50	
4.0 904.5							
					AR3 4.5		
6.0 902.5							Top 6.0m
					AR4 6.0		
					D2 6.5/6.95	50	
8.0 900.2							
	8.54-11.3		**Silt**-and fine sand, trace gravel, fine to coarse, non-plastic, iso. cobbles, grey, hard, moist.		AR5 7.5		
10.0 898.2							Sand
					AR6 10.0		
	11.3-15.5		**Silt**-some fine sand, trace gravel, fine to coarse, non-plastic, grey/brown, hard, moist				
12.0 896.2							
					AR7 11.5		
14.0 894.2					AR8 13.0		0.010"
					D3 13.5/13.9	50	slotted
					AR9 14.0		pipe
16.0 892.2	15.5-18.3		**Sand**-fine and silt, some gravel fine to coarse, occ. cobbles, dense, light brown, damp.		AR10 15.0		
					D4 16/16.45	75	
					AR11 16.5		
18.0 890.2					AR12 18.0		
							18.3m
20.0 888.2			*End of TH95-01 at 18.3m - No groundwater seepage Monitoring Well installed*				
22.0							

Prepared by: Paul Blackett	Reviewed by:	Figure: 3
Groundwater Depth: no groundwater	Borehole Depth: 18.3m below surface	Date: 10/9/95

Project No: **7130-010.01**

Client: **CSRD**

Location: **Golden, BC**

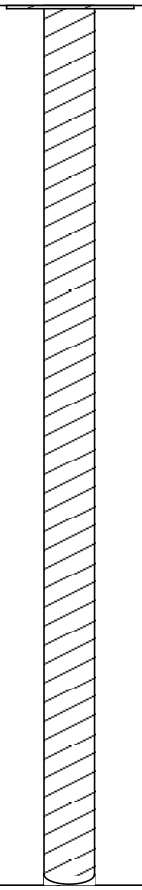
Logged by/ Checked by: **BRM/ MG**

Test Hole / Borehole I.D.: TH4

Well I.D.: **TH-4 (well closure)**

Location on site: **near weight scale**

Northing/ Easting/ Elevation: **0**

SUBSURFACE PROFILE			SAMPLE				
Depth	Symbol	Description	Type	I.D.	Flag for analysis	Well Details	Well Completion Details / Remarks
0 ft / 0 m		Ground Surface					
10 / 10 / 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100 ft; 10 / 20 / 30 m						TH-4 was replaced by MW-6S. TH-4 was decommissioned according to the Groundwater Protection Regulation. The surface casing was removed, the 2" piezometer was cut approximately 4" below ground surface and bentonite chips were poured into the casing. Bentonite was poured around the outer annulus of the piezometer to bring the hole to ground surface.	
110 ft		End of Borehole					

SUMMIT ENVIRONMENTAL CONSULTANTS LTD.

Contractor: JR Drilling

Operator(s): Jerry

Drill Method:

Ground conditions: bare

Date: April 20, 2009

Time:

Temperature: 10 degC

Sheet: 1 of 1

KALA GROUNDWATER CONSULTING LTD. TESTHOLE LOG

CLIENT: RCP	PROJECT: Hydrogeologial	TESTHOLE:	BH95-04
LOCATION: Golden Landfill	Assessment - Golden BC	PROJECT NO:	KE95-057
DRILL RIG: Becker Hammer	SURF ELV: 916.9m ASL.	CO-ORDINATES:	

DEPTH (m) ELV. (m)	INDEX: METHANE % (0 5 10 15 20)	Plot	SOIL DESCRIPTION	Lab Test	SAMPLES	COMPLETION DETAILS
Grass					Depth (m) N	Stickup 1.2m
	0-3.35		**Silt**-and fine sand, trace gravel fine to coarse, occ. cobbles, non-plastic, dense, yellow/brown, damp.		AR1 1.5	50mm dia. Solid pipe
2.0 914.9						Bentonite Grout & backfill
					AR2 3.0	
					D! 3.5/3.95 35	
4.0 912.9	3.35-5.49		**Gravel**-fine to coarse, and silt, trace sand fine to coarse, occ. cobbles, light brown, moist.		AR3 4.5	
6.0 910.9	5.49-11.0		**Silt**-and fine sand, trace coarse sand, trace gravel, fine to coarse, iso. cobbles, non-plastic, grey/brown, hard, moist.		AR4 6.0	
					D2 6.5/6.95 50	
8.0 908.9					AR5 7.5	
10.0 906.9						Sand
					AR6 10.0	
					D3 10/10.45 45	
12.0 904.9	11.0-12.8		**Sand**-fine to medium, and gravel, fine to coarse, iso. cobbles, trace silt, dense, red/brown, moist.		AR7 11.5	
	12.8-17.7		**Sand**- fine to medium, and silt, little gravel fine to coarse, iso. cobbles, brown, hard, moist.		AR8 13.0	0.010" slotted pipe
14.0 902.9					D2 13.5/13.9 50	
					AR9 14.0	
16.0 900.2					AR10 15.0	
					D4 15/15.45 70	
					AR11 16.5	
18.0 898.2	17.7-30.48		**Sand** - fine and silt, trace gravel, fine to coarse, brown, hard, moist.		AR12 18.0	
					AR13 22.0	
20.0 896.2					AR 14 25.0	Top 20.0m
			End of TH95-01 at 30.48m - No groundwater seepage		AR15 27.5	
30.0 894.2			*Monitoring Well installed*		AR 16 30.0	Bot 30.5m

Prepared by: Paul Blackett	Reviewed by:	Figure:
Groundwater Depth: no groundwater	Borehole Depth: 30.5m below surface	Date: 10/9/95

MODIFIED UNIFIED CLASSIFICATION SYSTEM FOR SOILS

MAJOR DIVISION			GROUP SYMBOL	GRAPH SYMBOL	COLOR CODE	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA
COARSE-GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN 200 SIEVE)	GRAVELS MORE THAN HALF COARSE GRAINS LARGER THAN NO 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)	GW		RED	WELL GRADED GRAVELS, LITTLE OR NO FINES	$C_U = \frac{D_{60}}{D_{10}} > 4$ $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1$ to 3
			GP		RED	POORLY GRADED GRAVELS, AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS
		DIRTY GRAVELS (WITH SOME FINES)	GM		YELLOW	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12% — ATTERBERG LIMITS BELOW "A" LINE OR P.I. LESS THAN 4
			GC		YELLOW	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	CONTENT OF FINES EXCEEDS 12% — ATTERBERG LIMITS ABOVE "A" LINE P.I. MORE THAN 7
	SANDS MORE THAN HALF FINE GRAINS SMALLER THAN NO 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)	SW		RED	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	$C_U = \frac{D_{60}}{D_{10}} > 6$ $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1$ to 3
			SP		RED	POORLY GRADED SANDS, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS
		DIRTY SANDS (WITH SOME FINES)	SM		YELLOW	SILTY SANDS, SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12% — ATTERBERG LIMITS BELOW "A" LINE P.I. LESS THAN 4
			SC		YELLOW	CLAYEY SANDS, SAND-CLAY MIXTURES	CONTENT OF FINES EXCEEDS 12% — ATTERBERG LIMITS ABOVE "A" LINE P.I. MORE THAN 7
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT PASSES 200 SIEVE)	SILTS BELOW "A" LINE NEGLIGIBLE ORGANIC CONTENT	$W_L < 50\%$	ML		GREEN	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (see below)
		$W_L > 50\%$	MH		BLUE	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS	
	CLAYS ABOVE "A" LINE ON PLASTICITY CHART NEGLIGIBLE ORGANIC CONTENT	$W_L < 30\%$	CL		GREEN	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS	
		$30\% < W_L < 50\%$	CI		GREEN-BLUE	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS	
		$W_L > 50\%$	CH		BLUE	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	ORGANIC SILTS & CLAYS BELOW "A" LINE ON CHART	$W_L < 50\%$	OL		GREEN	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	WHENEVER THE NATURE OF THE FINE CONTENT HAS NOT BEEN DETERMINED, IT IS DESIGNATED BY THE LETTER "F", E.G. SF IS A MIXTURE OF SAND WITH SILT OR CLAY
		$W_L > 50\%$	OH		BLUE	ORGANIC CLAYS OF HIGH PLASTICITY	
HIGHLY ORGANIC SOILS			Pt		ORANGE	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOR OR ODOR, AND OFTEN FIBROUS TEXTURE

SPECIAL SYMBOLS

BEDROCK (Undifferentiated)

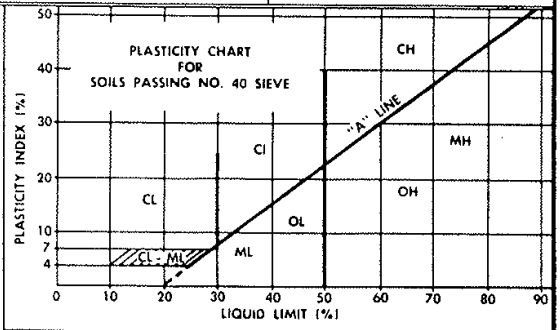
VOLCANIC ASH

SOIL COMPONENTS

FRACTION	U S STANDARD SIEVE SIZE		DEFINING RANGES OF PERCENTAGE BY WEIGHT OF MINOR COMPONENTS	
	PASSING	RETAINED	PERCENT	DESCRIPTOR
GRAVEL			50 - 35	and
coarse	76 mm	19 mm		
fine	19 mm	No 4	35 - 20	some
SAND				
coarse	4.75 mm	2.00 mm	20 - 10	little
medium	2.00 mm	425 μm		
fine	425 μm	75 μm	10 - 1	trace
SILT (non plastic) or CLAY (plastic)	75 μm			

OVERSIZE MATERIAL

Rounded or subrounded	Not rounded
COBBLES 76 mm to 203 mm	ROCK FRAGMENTS > 76 mm
BOULDERS > 203 mm	ROCKS > 0·76 cubic metre in volume



1. ALL SIEVE SIZES MENTIONED ON THIS CHART ARE U.S. STANDARD, A.S.T.M. E.11.
2. BOUNDARY CLASSIFICATIONS POSSESSING CHARACTERISTICS OF TWO GROUPS ARE GIVEN COMBINED GROUP SYMBOLS, E.G. GW-GC IS A WELL GRADED GRAVEL SAND MIXTURE WITH CLAY BINDER BETWEEN 5% AND 12%.

Kala Groundwater Consulting Ltd.
Vernon Kamloops

Testhole Log - TH95-01	
Depth (m)	**Soil Description**
0-5.8	**Silt**-and fine sand, little gravel fine to coarse, iso. cobbles, non-plastic, dense, yellow/brown, moist.
5.8-6.71	**Silt**-and sand fine to medium, some gravel fine to coarse, non-plastic, hard, grey, moist.
6.71-8.54	**Silt**-and fine sand, trace coarse sand, trace gravel, fine to coarse, iso. cobbles, non-plastic, gre/brown, hard, moist.
8.54-11.3	**Silt**-and fine sand, trace gravel, fine to coarse, non-plastic, iso. cobbles, grey, hard, moist.
11.3-14.9	**Silt**-some fine sand, trace gravel, fine to coarse, occ. cobbles, non-plastic, red/brown, hard, damp.
14.9-18.9	**Clay**-and silt, trace fine sand, trace fine gravel, iso. cobbles, low to none plastic, grey, hard, moist.
	End of TH95-01 at 18.9m - No groundwater seepage - Monitoring Well installed

Testhole Log - TH95-02	
Depth (m)	**Soil Description**
0-9.76	**Sand**-fine and silt, some gravel fine to coarse, occ. cobbles, dense, light brown, damp. *Upper 0.3m fill*
9.76-12.8	**Sand**-afine and silt, some gravel fine to coarse, iso. cobbles, dense, red/brown, moist.
12.8-15.5	**Sand**-fine, some silt, some gravel fine to coarse, occ. cobbles. dense, red/brown, moist.
15.5-16.5	**Silt**-some fine sand, trace gravel, fine to coarse, non-plastic, iso. grey/brown, cobbles, stiff, moist.
16.5-20.1	**Silt**-little fine sand, trace clay, trace gravel, fine to coarse, occ. cobbles, non-plastic, red/brown, hard, damp.
20.1-22.9	**Silt** - some sand, fine to coarse, trace gravel fine to coasre, iso. cobbles, grey, very hard, non-plastic,
	End of TH95-02 at 22.9m - No groundwater seepage - Monitoring Well installed

Testhole Log - TH95-03	
Depth (m)	**Soil Description**
0-8.54	**Silt**-some fine sand, some gravel, fine to coarse, iso. cobbles, non-plastic, red/brown, dense, damp
8.54-11.3	**Silt**-and fine sand, trace gravel, fine to coarse, non-plastic, iso. cobbles, grey, hard, moist
11.3-15.5	**Silt**-some fine sand, trace gravel, fine to coarse, non-plastic, grey/brown, hard, moist
15.5-18.3	**Sand**-fine and silt, some gravel fine to coarse, occ. cobbles, dense, light brown, damp.
	End of TH95-03at 18.3m - No groundwater seepage -Monitoring Well installed

Testhole Log - TH95-04	
Depth (m)	**Soil Description**
0-3.35	**Silt**-and fine sand, trace gravel fine to coarse, occ. cobbles, non-plastic, dense, yellow/brown, damp.
3.35-5.49	**Gravel**-fine to coarse, and silt, trace sand fine to coarse, occ. cobbles, light brown, moist.
5.49-11.0	**Silt**-and fine sand, trace coarse sand, trace gravel, fine to coarse, iso. cobbles, non-plastic, gre/brown, hard, moist.
11.0-12.8	**Sand**-fine to medium, and gravel, fine to coarse, iso. cobbles, trace silt, dense, red/brown, moist.
12.8-17.7	**Sand**- fine to medium, and silt, little gravel fine to coarse, iso. cobbles, brown, hard, moist.
17.7-30.48	**Sand** - fine and silt, trace gravel, fine to coarse, brown, hard, moist.
	End of TH95-04 at 26.2m - No groundwater seepage - Monitoring Well installed

Testhole Log - TH95-05	
Depth (m)	**Soil Description**
0-1.3	**Silt**-and fine sand, little gravel fine to coarse, iso. cobbles, non- plastic, dense, yellow/brown, moist.
1.3-3.1	**Waste**-municipal debris, paper,tin plastics,mixed with soil, damp.
3.1-3.4	**Sand**-fine to medium, some silt, little gravel, fine to coarse, compact, brown, moist.
3.4-5.1	**Waste**-municipal debris, paper,tin plastics,mixed with soil, damp.
5.1-5.4	**Sand**-fine to medium, some silt, little gravel, fine to coarse, compact, brown, moist.
5.4-6.2	**Waste**-municipal debris, paper,tin plastics,mixed with soil, damp.
6.2-7.1	**Sand**-fine to medium, some silt, little gravel, fine to coarse, compact, brown, moist.
	End of TH5 at 7.1m no groundwater-temporary installation

KALA GROUNDWATER CONSULTING LTD. **TESTHOLE LOG**

CLIENT: RCP	PROJECT: Hydrogeologial	TESTHOLE:	BH95-02
LOCATION: Golden Landfill	Assessment - Golden BC	PROJECT NO:	KE95-057
DRILL RIG: Becker Hammer	SURF ELV: 914.0m ASL	CO-ORDINATES:	

DEPTH (m) ELV. (m)	INDEX: 0 20 40 60 80 100 120 140	Plot	SOIL DESCRIPTION	Lab Test	SAMPLES		COMPLETION DETAILS
Grass					Depth (m)	N	Stickup 1.2m
	0-9.76		**Sand**-fine and silt, some gravel fine to coarse, occ. cobbles, dense, light brown, damp. *Upper 0.3m fill*		AR1 1.5		50mm dia. Solid pipe
2.0 912							Bentonite Grout
					AR2 3.0		
4.0 910							
					AR3 4.5		
6.0 908							Top 6.0m
					AR4 6.0		
					D1 6.5/6.95	50	
8.0 906							
					AR5 7.5		
	9.76-12.8		**Sand**-fine and silt, some gravel fine to coarse, iso. cobbles, dense, grey, moist.				
10.0 904							Sand
					AR6 10.0		
12.0 902							
					AR7 11.5		
	12.8-15.5		**Sand**-fine, some silt, some gravel fine to coarse, occ. cobbles. dense, red/brown, moist.		AR8 13.0		0.010"
14.0 900					D2 13.5/13.9	50	slotted pipe
					AR9 14.0		
	15.5-16.5		**Silt**-some fine sand, trace gravel, fine to coarse, non-plastic, iso. grey/brown, cobbles, stiff, moist.				
16.0 898					AR10 15.0		
	16.5-20.1		**Silt**-little fine sand, trace clay, trace gravel, fine to coarse, occ. cobbles,. non-plastic, red/brown, hard, damp				
					AR11 16.5		
18.0 896							
					AR12 18.0		
20.0 894							
	20.1-22.9		**Silt** - some sand, fine to coarse, trace gravel fine to coarse, iso.cobbles, grey, very hard, non-plastic, moist.		D3 20/20.45	80	
22.0 892			*End of TH95-01 at 18.9m - No groundwater seepage Well installed*				Well base 22.9m

Prepared by: Paul Blackett	Reviewed by:	Figure:
Groundwater Depth: no groundwater	Borehole Depth: 22.9m below surface	Date: 10/9/95

Project No: 2010-8835.010.006

Well I.D.: BH9

Client: CSRD

First Water: n/a

Ground Elevation: Approx. 928 m asl

Location: Golden Landfill

Stabilized Water Level: n/a

Top of Casing Elevation: 0

Location on site: 5 m SE of landfill

Reviewed by: Tilman Roschinski

Logged by: Bryer Manwell

Subsurface Geology

Depth (ft / m)	Symbol	Description	Well Details and Notes	Well Construction
0 / 0		Ground Surface		
0 – 50 / 0 – 15		**SILT** Silt, occasional cobbles, dry to moist, yellowish-grey.	No well installed.	Natural slough
55		End of Borehole		

SUMMIT ENVIRONMENTAL CONSULTANTS INC.
A Member of the Associated Engineering Group of Companies

Contractor: Target Drilling Inc.

Drill Method: Coring

Boring Diameter/ Depth: 6 in

Operator(s):

Date: Oct 8 2010

Project No: 2010-8835.010.006

Well I.D.: TH-8

Client: CSRD

First Water: n/a

Ground Elevation: Approx. 915 m asl

Location: Golden Landfill

Stabilized Water Level: 14 m btoc

Top of Casing Elevation: flush mount

Location on site: 150 m NW of landfill on Golden Donald Upper Road

Reviewed by: Tilman Roschinski

Logged by: Bryer Manwell

Subsurface Geology

Depth (ft / m)	Symbol	Description	Well Details and Notes	Well Construction
-1		Ground Surface		
4 / 1		**SAND AND GRAVEL** Sand and gravel, trace fines, light brown.	Flush mount casing, well sealed with j-plug	Flush mount casing
14 / 5				Oct 7 2010
29 / 10				bentonite grout
49 / 15		**CLAYEY TILL** Clay matrix, some gravel, trace sand, dense, wet.		
54		**REGOLITH**		

SUMMIT ENVIRONMENTAL CONSULTANTS INC.
A Member of the Associated Engineering Group of Companies

Contractor: Target Drilling Inc.

Drill Method: Coring

Boring Diameter/ Depth: 6 in / 27.3 m

Operator(s):

Date: Oct 5-7 2010

Project No: 2010-8835.010.006 ***Well I.D.: TH-8***

Client: CSRD ***First Water:*** n/a ***Ground Elevation:*** Approx. 915 m asl

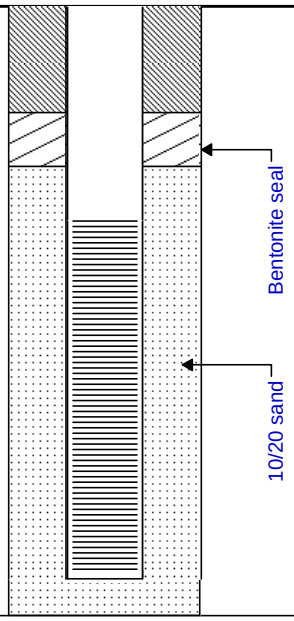
Location: Golden Landfill ***Stabilized Water Level:*** 14 m btoc ***Top of Casing Elevation:*** flush mount

Location on site: 150 m NW of landfill on Golden Donald Upper Road ***Reviewed by:*** Tilman Roschinski

Logged by: Bryer Manwell

Subsurface Geology

Depth	Symbol	Description	Well Details and Notes	Well Construction
60		**SLATE BEDROCK** Slaty bedrock, in places phyllitic, grey, fractured, some fractures filled with clay.	1 m bentonite seal	
65		**QUARTZ BEDROCK** Quartz, likely a large vein. Fluid mixing with sedimentary deposits on either end.		
70	21	**SLATE BEDROCK** Slaty bedrock, as above.	Screen depth: 67-87 ft (20.4 - 26.5 m)	
75		**QUARTZ BEDROCK** Quartz, as above.	Screen details: -10 slot PVC, 2 inch diameter -10/20 sand pack	
80		**SLATE BEDROCK** Slaty bedrock, as above		
85	26			
90		End of Borehole		
95				
100	31			
105				
110				



Contractor: Target Drilling Inc. **Operator(s):**

Drill Method: Coring **Date:** Oct 5-7 2010

Boring Diameter/ Depth: 6 in / 27.3 m

BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 99638 Owner: KATS CONTRACTING Address: 532 HIETALA ROAD Area: GOLDEN WELL LOCATION: KOOTENAY Land District District Lot: Plan: Lot: Township: 27 Section: 18 Range: 21 Indian Reserve: Meridian: W5M Block: A Quarter: Island: BCGS Number (NAD 27): 082N036121 Well: Class of Well: Water supply Subclass of Well: Domestic Orientation of Well: Vertical Status of Well: New Well Use: Private Domestic Observation Well Number: Observation Well Status: Construction Method: Diameter: inches Casing drive shoe: Y N Well Depth: 276 feet Elevation: feet (ASL) Final Casing Stick Up: 6 inches Well Cap Type: PLASTIC CAP Bedrock Depth: 18 feet Lithology Info Flag: N File Info Flag: N Sieve Info Flag: N Screen Info Flag: N Site Info Details: Other Info Flag: Other Info Details:	Construction Date: 2000-10-25 00:00:00.0 Driller: Owen's Drilling Ltd. Well Identification Plate Number: Plate Attached By: Where Plate Attached: PRODUCTION DATA AT TIME OF DRILLING: Well Yield: 6 (Driller's Estimate) U.S. Gallons per Minute Development Method: Air lifting Pump Test Info Flag: N Artesian Flow: Artesian Pressure (ft): Static Level: 50 feet WATER QUALITY: Character: Colour: Odour: Well Disinfected: N EMS ID: Water Chemistry Info Flag: N Field Chemistry Info Flag: Site Info (SEAM): Water Utility: Water Supply System Name: Water Supply System Well Name: SURFACE SEAL: Flag: N Material: Method: Depth (ft): Thickness (in): Liner from To: feet WELL CLOSURE INFORMATION: Reason For Closure: Method of Closure: Closure Sealant Material: Closure Backfill Material: Details of Closure:

Screen from	to feet	Type	Slot Size

Casing from	to feet	Diameter	Material	Drive Shoe
0	36	6	Steel	Y
36	276	5.88	Open hole	N

GENERAL REMARKS:
260' OF PVC LINER. BOTTOM 40' PERFORATED. SHOE: 1X6" CARBIDE BOTTON. RECOMMENDED PUMP TYPE: SUB

LITHOLOGY INFORMATION:

From	0 to	18 Ft.	CLAY, GRAVEL, COBBLES	
From	18 to	36 Ft.	BEDROCK, BROKEN	
From	36 to	150 Ft.	2 Gallons per Minute (U.S./Imperial)	bedrock
From	150 to	257 Ft.	2 Gallons per Minute (U.S./Imperial)	bedrock
From	256 to	276 Ft.	1 Gallons per Minute (U.S./Imperial)	bedrock

- Return to Main
- Return to Search Options
- Return to Search Criteria

Appendix C

Water Quality Database

Legend of Naming Scheme for Refuse Disposal Monitoring Locations

Site Location	Pervious Monitoring Location Identification	New Monitoring Location Identification
SICAMOUS	TH-2	MW97-02
	MW-3	MW09-03
	MW-4S	MW09-04S
	MW-4D	MW09-04D
	MW15-05	MW15-05
SALMON ARM	TH-1	MW95-01
	TH-2	MW95-02
	TH-3	MW95-03
	TH-5	MW08-05
	TH-6	MW11-06
	DMW-1	DMW-1
	IW-1a	IW-1a
	IW-1b	IW-1b
	Leachate Pond	Leachate Pond
	MW16-07	MW16-07
SKIMIKIN	BH-5	MW94-05
	TH-8	MW97-08
	TH-11	MW97-11
	TH-12	MW97-12
	TH-13	MW97-13
	DMW-1	DMW-1
	DMW-2	DMW-2
	SW-1	SW-1
	SW-1a	SW-1a
GOLDEN	TH-1	MW95-01
	TH-2	MW95-02
	TH-3	MW95-03
	TH-4	MW95-04
	TH-5	MW95-05
	MW-6S	MW09-06S
	MW-6D	MW09-06D
	GP-6S/D	GP-6S/D
	TH-7	MW09-07
	GP-7S/D	GP-7S/D
	TH-8	MW10-08
	BH-9	BH-9
	Town Well #4	Town Well #4
	Town Well #6	Town Well #6
	DMW-1	DMW-1
	DMW-1b	DMW-1b
	DMW-2	DMW-2
	DMW-3	DMW-3
	DMW-4	DMW-4

Site Location	Pervious Monitoring Location Identification	New Monitoring Location Identification
REVELSTOKE	TH-1	MW92-01
	TH-2	MW92-02
	TH-3	MW92-03
	TH-4	MW92-04
	TH-4A	MW06-04A
	TH-5	MW92-05
	TH-5A	MW06-05A
	TH-5A1	MW06-05A1
	TH-5A2	MW06-05A2
	TH-6	MW94-06
	TH-7	MW94-07
	TH-8	MW94-08
	TH-9	MW94-09
	TH-10	MW94-10
	TH-11	MW94-11
	TH-12	MW94-12
	TH-13	MW92-13
	TH-15	MW-15
	TH-17	MW-17
	TH-18	MW10-18
	TH-19	MW10-19
	TH-20	MW11-20
	BH-06-1	BH06-1
	SW-7	SW-7
	SW-8	SW-8
	SW-10	SW-10
	SW-11	SW-11
	SW-12	SW-12
	SW-12b	SW-12b
	SW-14	SW-14
	DC-1	DC-1
	Leachate 1	Leachate 1
	Leachate 2	Leachate 2
	SWG (PW-12)	SWG
	FS-12	FS-12
	HZ-15	HZ-15

Legend for Reports for CSRD Refuse Disposal Sites Water Quality Results

<	Less than reported detection limit
>	Greater than reported upper detection limit
>=	Greater than or equal to
A	Absent
BC CSR AW(F)	BC CSR, Schedule 3.2, Generic Numerical Water Standards for Freshwater Aquatic Life (2017 and updates)
BC CSR DW	BC CSR, Schedule 3.2, Generic Numerical Water Standards for Drinking Water (2017 and updates)
Calc	Calculated guideline or standard. The guideline or standard is dependent on the value of one or more other analytes, and is calculated from a formula or table.
GCDWQ AO	Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives
GCDWQ MAC	Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentrations
L	Laboratory reading type (Lab result)
m asl	metres above sea level
N	Narrative type of guideline or standard, or Result Note.
ND	Non-detect. Result is less than lower detection limit.
NG	No Guideline
NR	No Result
NS	No Standard
NT	Not Tested
OG	Overgrown
P	Present
PR	Presumptive
TK	Test kit reading type (Field result)
TNTC	Too numerous to count
	Highlighted value has a lower detection limit that is greater than the guideline/standard maximum and/or the guideline/standard minimum, or has an upper detection limit that is less than the guideline/standard maximum and/or the guideline/standard minimum.
BC CSR AW(F)	Highlighted value exceeds BC CSR AW(F)
BC CSR DW	Highlighted value exceeds BC CSR DW
GCDWQ AO	Highlighted value exceeds GCDWQ AO
GCDWQ MAC	Highlighted value exceeds GCDWQ MAC
SL Criteria Override	Highlighted value exceeds sampling location criteria override

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	Guideline				Sampling Location	DMW-1	DMW-1	DMW-1	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b
						Date Sampled	09-Feb-10	15-Jun-10	16-Nov-10	09-May-11	10-Aug-11	18-Oct-11	24-May-12	22-Aug-12	20-Nov-12	21-May-13	20-Aug-13	12-Nov-13	02-Jun-14	18-Aug-14
						Lab Sample ID	K0B0397-04	K0F0788-01	K0K0729-04	K1E0403-05	K1H0536-03	K1J0685-03	2051369-01	2081484-03	2111131-03	3051354-03	3081378-03	3110772-03	4060249-03	4081094-03
						Sample Type							Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
		GCDWQ MAC	GCDWQ AO	BC CSR AW(F)	BC CSR DW															
Field Results																				
Conductivity	µS/cm	NG	NG	NG	NG		1120	1220	1150	1220	1000	1150	1170	1140	1070	870	750	1040	1075	1030
Depth to Water	m	NG	NG	NG	NG							9.890								
Dissolved oxygen	mg/L	NG	NG	NG	NG														0.29	0.59
Dissolved oxygen (percent)	%	NG	NG	NG	NG														2.8	3.5
Field measured depth to bottom	m	NG	NG	NG	NG															
Flow rate - container	L/s	NG	NG	NG	NG															
Ground Elevation	m	NG	NG	NG	NG					975	975	975	975	975	975	975	975	975	975	975
Oxidation reduction potential	mV	NG	NG	NG	NG			61.0	-18.0	-199	40	162	99	44	-12	124	8	19	-41	-86
pH		NG	7.0 - 10.5 [2.1]	NG	NG		7.31	7.28	7.30	7.40	7.31	7.23	7.15	7.54	7.4	7.36	7.22	7.16	7.3	7.3
Temperature	°C	NG	15	NG	NG		6.5	9.9	6.2	8.8	9.5	6.1	8.2	10.0	8.0	8.7	7.7	8.0	7.8	9.1
Lab Results																				
Chlorinated Hydrocarbons																				
1,2-Dichlorobenzene	mg/L	0.2	0.003	0.007	0.200 [4.1]															
1,3-Dichlorobenzene	mg/L	NG	NG	1.500	NG															
1,4-Dichlorobenzene	mg/L	0.005	0.001	0.260	0.005 [4.2]															
1,1-Dichloroethane	mg/L	NG	NG	NG	0.030															
1,2-Dichloroethane	mg/L	0.005	NG	1.000	0.005															
1,1-Dichloroethylene	mg/L	0.014	NG	NG	0.014															
cis-1,2-Dichloroethylene	mg/L	NG	NG	NG	0.008															
trans-1,2-Dichloroethylene	mg/L	NG	NG	NG	0.080															
Monochlorobenzene	mg/L	0.08	0.03	0.013	0.080 [4.3]															
1,1,2,2-Tetrachloroethane	mg/L	NG	NG	NG	0.0008															
Tetrachloroethylene	mg/L	0.01	NG	1.100	0.030															
1,1,1-Trichloroethane	mg/L	NG	NG	NG	8.000															
1,1,2-Trichloroethane	mg/L	NG	NG	NG	0.003															
Trichloroethylene	mg/L	0.005	NG	0.200	0.005															
General																				
Alkalinity (bicarbonate, as CaCO3)	mg/L	NG	NG	NG	NG															
Alkalinity (carbonate, as CaCO3)	mg/L	NG	NG	NG	NG															
Alkalinity (hydroxide, as CaCO3)	mg/L	NG	NG	NG	NG															
Alkalinity (phenolphthalein, as CaCO3)	mg/L	NG	NG	NG	NG															
Alkalinity (total, as CaCO3)	mg/L	NG	NG	NG	NG		444	453	475	509	509	495	486	480	512	497	463	479	499	479
Bicarbonate Alkalinity (as HCO3)	mg/L	NG	NG	NG	NG															
Carbonate Alkalinity (as CO3)	mg/L	NG	NG	NG	NG															
Hydroxide Alkalinity (as OH)	mg/L	NG	NG	NG	NG															
Bromide	mg/L	NG	NG	NG	NG															
Chemical Oxygen Demand	mg/L	NG	NG	NG	NG															
Chloride	mg/L	NG	250	1500	250 [4.4]		26.8	23.3	30.1	26.0	27.7	32.7	28.4	32.2	35.7	38.9	40.9	41.1	35.8	39.7
Conductivity	µS/cm	NG	NG	NG	NG		1130	1140	1090	1120	1090	1100	1150	1120	1120	1110	1140	1150	1160	1140
Fluoride	mg/L	1.5	NG	Calc [3.1]	1.500								1.10	0.81	1.05	1.23	1.31	1.02	1.13	0.84
Hardness, Total (dissolved as CaCO3)	mg/L	NG	NG	NG	NG		583	558	611	655	590	550	654	618	590	629	644	641	692	650
Hardness, Total (total as CaCO3)	mg/L	NG	NG	NG	NG															
pH		NG	7.0 - 10.5 [2.2]	NG	NG		7.73	7.89	7.69	7.84	7.79	7.79	7.86	7.85	7.09	7.78	7.86	7.86	7.89	7.66
Sulphate	mg/L	NG	500 [2.3]	Calc [3.2]	500 [4.5]		208	213	91.7	137	133	124	144	127	123	121	129	117	135	127
Total organic carbon	mg/L	NG	NG	NG	NG															
Total suspended solids	mg/L	NG	NG	NG	NG		2	<1	<1	<1	<1	<1	1	17	12	4	<1	1	<1	1
Turbidity	NTU	N [1.1]	NG	NG	NG		0.8	0.5	3.6	2.0	3.4	1.8	1.6	3.0	3.4	3.0	3.4	3.2	4.3	3.7
Halogenated Methanes																				
Bromodichloromethane	mg/L	0.100 [1.2]	NG	NG	0.100 [4.6]															
Bromoform	mg/L	0.100 [1.3]	NG	NG	0.100 [4.7]															

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	Guideline				Sampling Location	DMW-1	DMW-1	DMW-1	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b
						Date Sampled	09-Feb-10	15-Jun-10	16-Nov-10	09-May-11	10-Aug-11	18-Oct-11	24-May-12	22-Aug-12	20-Nov-12	21-May-13	20-Aug-13	12-Nov-13	02-Jun-14	18-Aug-14
						Lab Sample ID	K0B0397-04	K0F0788-01	K0K0729-04	K1E0403-05	K1H0536-03	K1J0685-03	2051369-01	2081484-03	2111131-03	3051354-03	3081378-03	3110772-03	4060249-03	4081094-03
						Sample Type							Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
		GCDWQ MAC	GCDWQ AO	BC CSR AW(F)	BC CSR DW															
Carbon tetrachloride	mg/L	0.002	NG	0.130	0.002															
Chloroform	mg/L	0.100 [1.4]	NG	0.020	0.100 [4.8]															
Dibromochloromethane	mg/L	0.100 [1.5]	NG	NG	0.100 [4.9]															
Dibromomethane	mg/L	NG	NG	NG	NG															
Dichloromethane	mg/L	0.05	NG	0.980	0.050															
Total Trihalomethanes (calculated)	mg/L	0.100 [1.6]	NG	NG	0.100 [4.10]															
Trichlorofluoromethane	mg/L	NG	NG	NG	1.000															
Metals																				
Aluminum (dissolved)	mg/L	NG	N [2.4]	NG	9.500 [4.11]		<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.005
Aluminum (total)	mg/L	NG	N [2.5]	NG	9.500 [4.12]															
Antimony (dissolved)	mg/L	0.006	NG	0.090	0.006		0.0002	0.0002	<0.0001	0.0002	0.0002	<0.0020	0.0001	0.0002	0.0004	0.0004	0.0004	0.0005	0.0003	0.0003
Antimony (total)	mg/L	0.006	NG	0.090	0.006															
Arsenic (dissolved)	mg/L	0.010 [1.7]	NG	0.050	0.010		0.0043	0.0070	0.0389	0.0260	0.0362	0.0285	0.0196	0.0419	0.0392	0.0388	0.0397	0.0382	0.0351	0.0378
Arsenic (total)	mg/L	0.010 [1.8]	NG	0.050	0.010															
Barium (dissolved)	mg/L	1.0	NG	10.000	1.000		0.0236	0.0230	0.0269	0.0242	0.022	0.021	0.024	0.023	0.022	0.023	0.023	0.023	0.024	0.024
Barium (total)	mg/L	1.0	NG	10.000	1.000															
Beryllium (dissolved)	mg/L	NG	NG	0.0015	0.008		<0.0001	<0.0001	0.0001	0.0001	<0.0001	0.0001	0.0001	<0.0001	0.0001	0.0001	<0.0001	0.0001	0.0002	0.0001
Beryllium (total)	mg/L	NG	NG	0.0015	0.008															
Bismuth (dissolved)	mg/L	NG	NG	NG	NG		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001
Bismuth (total)	mg/L	NG	NG	NG	NG															
Boron (dissolved)	mg/L	5	NG	12.000	5.000		0.171	0.233	0.174	0.143	0.135	0.104	0.138	0.137	0.133	0.145	0.166	0.158	0.153	0.138
Boron (total)	mg/L	5	NG	12.000	5.000															
Cadmium (dissolved)	mg/L	0.005	NG	Calc [3.3]	0.005		0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00003	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	0.00001
Cadmium (total)	mg/L	0.005	NG	Calc [3.4]	0.005															
Calcium (dissolved)	mg/L	NG	NG	NG	NG		73.9	70.9	73.5	71.9	63.2	65.9	61.2	63.9	64.0	68.7	71.8	73.4	74.0	73.1
Calcium (total)	mg/L	NG	NG	NG	NG															
Chromium (dissolved)	mg/L	0.05	NG	0.010 [3.5]	0.050 [4.13]		0.0146	0.0014	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Chromium (total)	mg/L	0.05	NG	0.010 [3.6]	0.050 [4.14]															
Cobalt (dissolved)	mg/L	NG	NG	0.040	0.001		0.00063	0.00075	0.00012	0.00011	0.00009	<0.00005	0.00017	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00013	0.00012
Cobalt (total)	mg/L	NG	NG	0.040	0.001															
Copper (dissolved)	mg/L	NG	1.0	Calc [3.7]	1.500 [4.15]		0.0297	0.0392	0.0004	0.0006	0.0008	0.0020	0.0002	0.0002	0.0014	0.0004	<0.0002	<0.0002	0.0007	<0.0002
Copper (total)	mg/L	NG	1.0	Calc [3.8]	1.500 [4.16]															
Iron (dissolved)	mg/L	NG	0.3	NG	6.500 [4.17]		0.053	0.260	0.418	0.145	0.28	0.11	0.19	0.35	0.27	0.318	0.294	0.345	0.351	0.378
Iron (total)	mg/L	NG	0.3	NG	6.500 [4.18]															
Lead (dissolved)	mg/L	0.010	NG	Calc [3.9]	0.010		0.0001	0.0004	<0.0001	0.0002	0.0001	0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0002
Lead (total)	mg/L	0.010	NG	Calc [3.10]	0.010															
Lithium (dissolved)	mg/L	NG	NG	NG	0.008		0.0232	0.0310	0.0260	0.0238	0.0218	0.0209	0.0196	0.0228	0.0227	0.0251	0.0251	0.0259	0.0264	0.0252
Lithium (total)	mg/L	NG	NG	NG	0.008															
Magnesium (dissolved)	mg/L	NG	NG	NG	NG		96.7	92.5	104	116	104	94.7	122	111	104	111	113	111	123	114
Magnesium (total)	mg/L	NG	NG	NG	NG															
Manganese (dissolved)	mg/L	NG	0.05	NG	1.500 [4.19]		0.0022	0.0032	0.0042	0.0039	0.0040	0.0039	0.0050	0.0041	0.0037	0.0040	0.0039	0.0039	0.0054	0.0158
Manganese (total)	mg/L	NG	0.05	NG	1.500 [4.20]															
Mercury (dissolved)	mg/L	0.001	NG	0.00025	0.001		<0.00005	<0.00005	<0.00005	<0.00002	<0.00002	<0.00002	<0.00002	0.00033	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Mercury (total)	mg/L	0.001	NG	0.00025	0.001															
Molybdenum (dissolved)	mg/L	NG	NG	10.000	0.250		0.0011	0.0008	0.0004	0.0003	0.0004	0.0017	0.0006	0.0004	0.0004	0.0004	0.0002	0.0004	0.0003	0.0004
Molybdenum (total)	mg/L	NG	NG	10.000	0.250															
Nickel (dissolved)	mg/L	NG	NG	Calc [3.11]	0.080		0.0034	0.0046	0.0036	0.0011	0.0014	0.0011	<0.0002	0.0014	0.0012	0.0014	0.0015	0.0016	0.0012	0.0021
Nickel (total)	mg/L	NG	NG	Calc [3.12]	0.080															
Selenium (dissolved)	mg/L	0.05	NG	0.020	0.010		0.0005	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Selenium (total)	mg/L	0.05	NG	0.020	0.010															
Silicon (dissolved, as Si)	mg/L	NG	NG	NG	NG		10.4	6.09	4.55	7.93	8.0	7.3	7.6	7.9	8.0	7.9	8.0	7.4	7.4	8.0
Silicon (total, as Si)	mg/L	NG	NG	NG	NG															
Silver (dissolved)	mg/L	NG	NG	Calc [3.13]	0.020		<0.00005	<0.00005	<0.00005	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	Guideline				Sampling Location	DMW-1	DMW-1	DMW-1	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b
						Date Sampled	09-Feb-10	15-Jun-10	16-Nov-10	09-May-11	10-Aug-11	18-Oct-11	24-May-12	22-Aug-12	20-Nov-12	21-May-13	20-Aug-13	12-Nov-13	02-Jun-14	18-Aug-14
						Lab Sample ID	K0B0397-04	K0F0788-01	K0K0729-04	K1E0403-05	K1H0536-03	K1J0685-03	2051369-01	2081484-03	2111131-03	3051354-03	3081378-03	3110772-03	4060249-03	4081094-03
						Sample Type							Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
		GCDWQ MAC	GCDWQ AO	BC CSR AW(F)	BC CSR DW															
Silver (total)	mg/L	NG	NG	Calc [3.14]	0.020															
Sodium (dissolved)	mg/L	NG	200	NG	200 [4.21]		25.8	23.7	26.6	25.4	25.1	25.3	23.5	29.6	27.4	29.1	30.4	29.7	25.4	28.4
Sodium (total)	mg/L	NG	200	NG	200 [4.22]															
Strontium (dissolved)	mg/L	NG	NG	NG	2.500		3.07	3.89	1.88	1.80	1.69	1.62	1.69	1.72	1.67	1.76	1.74	1.70	1.81	1.76
Strontium (total)	mg/L	NG	NG	NG	2.500															
Sulphur (dissolved)	mg/L	NG	NG	NG	NG								55	50	46	46	45	37	52	46
Sulphur (total)	mg/L	NG	NG	NG	NG															
Tellurium (dissolved)	mg/L	NG	NG	NG	NG		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tellurium (total)	mg/L	NG	NG	NG	NG															
Thallium (dissolved)	mg/L	NG	NG	0.003	NG		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00004	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Thallium (total)	mg/L	NG	NG	0.003	NG															
Thorium (dissolved)	mg/L	NG	NG	NG	NG		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thorium (total)	mg/L	NG	NG	NG	NG															
Tin (dissolved)	mg/L	NG	NG	NG	2.500		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002
Tin (total)	mg/L	NG	NG	NG	2.500															
Titanium (dissolved)	mg/L	NG	NG	1.000	NG		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Titanium (total)	mg/L	NG	NG	1.000	NG															
Tungsten (dissolved)	mg/L	NG	NG	NG	0.003															
Tungsten (total)	mg/L	NG	NG	NG	0.003															
Uranium (dissolved)	mg/L	0.02	NG	0.085	0.020		0.00173	0.00165	0.00008	0.00013	0.00011	0.00009	0.00014	0.00007	0.00009	0.00009	0.00007	0.00008	0.00014	0.00014
Uranium (total)	mg/L	0.02	NG	0.085	0.020															
Vanadium (dissolved)	mg/L	NG	NG	NG	0.020		0.0055	0.0028	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium (total)	mg/L	NG	NG	NG	0.020															
Zinc (dissolved)	mg/L	NG	5.0	Calc [3.15]	3.000 [4.23]		0.0096	0.0193	0.0097	0.0321	0.005	0.010	0.009	<0.004	0.005	<0.004	<0.004	<0.004	<0.004	<0.004
Zinc (total)	mg/L	NG	5.0	Calc [3.16]	3.000 [4.24]															
Zirconium (dissolved)	mg/L	NG	NG	NG	NG		0.0006	0.0004	0.0020	0.0015	0.0013	0.0011	0.0011	0.0013	0.0014	0.0011	0.0010	0.0011	0.0012	0.0012
Zirconium (total)	mg/L	NG	NG	NG	NG															
Microbiological																				
E. coli (counts)	CFU/100 mL	0 [1.9]	NG	NG	NG															
E. coli (MPN)	MPN/100 mL	0 [1.10]	NG	NG	NG															
Fecal coliforms (counts)	CFU/100 mL	0 [1.11]	NG	NG	NG															
Fecal coliforms (MPN)	MPN/100 mL	0 [1.12]	NG	NG	NG															
Total coliforms (counts)	CFU/100 mL	0 [1.13]	NG	NG	NG															
Total coliforms (MPN)	MPN/100 mL	0 [1.14]	NG	NG	NG															
Miscellaneous Organic Substances																				
Chloroethane	mg/L	NG	NG	NG	NG															
1,2-Dibromoethane	mg/L	NG	NG	NG	0.0005															
1,2-Dichloropropane	mg/L	NG	NG	NG	0.0045															
1,3-Dichloropropene	mg/L	NG	NG	NG	0.0015															
Methyl tert-butyl ether (MTBE)	mg/L	NG	0.015	34.000	0.095 [4.25]															
VHw6-10	mg/L	NG	NG	15.000 [3.17]	15.000 [4.26]															
Vinyl chloride	mg/L	0.002 [1.15]	NG	NG	0.002															
VPHw	mg/L	NG	NG	1.500 [3.18]	NG															
Monocyclic Aromatic Hydrocarbons (MAHs)																				
Benzene	mg/L	0.005	NG	0.400	0.005															
Ethylbenzene	mg/L	0.14	0.0016	2.000	0.140 [4.27]															
Styrene	mg/L	NG	NG	0.720	0.800															
Toluene	mg/L	0.06	0.024	0.005	0.060 [4.28]															
Xylenes	mg/L	0.09	0.02	0.300	0.090															
Nutrients																				

Golden Refuse Disposal Site

Water Quality Results

					Sampling Location	DMW-1	DMW-1	DMW-1	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b	DMW-1b
					Date Sampled	09-Feb-10	15-Jun-10	16-Nov-10	09-May-11	10-Aug-11	18-Oct-11	24-May-12	22-Aug-12	20-Nov-12	21-May-13	20-Aug-13	12-Nov-13	02-Jun-14	18-Aug-14
					Lab Sample ID	K0B0397-04	K0F0788-01	K0K0729-04	K1E0403-05	K1H0536-03	K1J0685-03	2051369-01	2081484-03	2111131-03	3051354-03	3081378-03	3110772-03	4060249-03	4081094-03
					Sample Type							Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Analyte	**Unit**	**Guideline**																	
		GCDWQ MAC	GCDWQ AO	BC CSR AW(F)	BC CSR DW														
Ammonia (total, as N)	mg/L	NG	NG	Calc [3.19]	NG	0.65	0.76	0.29	0.20	0.26	0.26	0.155	0.263	0.031	0.274	0.274	0.295	0.261	0.280
Nitrate (as N)	mg/L	10	NG	400 [3.20]	10 [4.29]	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.199
Nitrate + Nitrite (as N)	mg/L	10 [1.16]	NG	400 [3.21]	10 [4.30]														
Nitrate + Nitrite (as N) (calculated)	mg/L	10 [1.17]	NG	400 [3.22]	10 [4.31]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.199
Nitrite (as N)	mg/L	1	NG	Calc [3.23]	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total kjeldahl nitrogen	mg/L	NG	NG	NG	NG														
Orthophosphate (dissolved, as P)	mg/L	NG	NG	NG	NG														
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L	NG	NG	NG	NG	<0.020	<0.020	<0.020	<0.020	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04
Phosphorus (total, by ICPMS/ICPOES)	mg/L	NG	NG	NG	NG														
Phosphorus (total, APHA 4500-P)	mg/L	NG	NG	NG	NG														
Potassium (dissolved)	mg/L	NG	NG	NG	NG	6.64	9.66	4.75	4.72	4.85	4.24	5.17	5.08	4.72	5.11	5.31	4.86	4.76	5.06
Potassium (total)	mg/L	NG	NG	NG	NG														

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	DMW-1b 04-Nov-14 4110161-03 Normal	DMW-1b 25-May-15 5051773-04 Normal	DMW-1b 25-Aug-15 5081710-02 Normal	DMW-1b 09-Nov-15 5110693-01 Normal	DMW-1b 03-May-16 6050336-02 Normal	DMW-1b 22-Aug-16 6081698-02 Normal	DMW-1b 14-Nov-16 6111141-04 Normal	DMW-1b 05-Apr-17 7040434-07 Normal	DMW-1b 29-Aug-17 7090074-04 Normal	DMW-1b 20-Nov-17 7111886-05 Normal	DMW-4 21-May-13 3051354-05 Normal	DMW-4 20-Aug-13 3081378-04 Normal	DMW-4 12-Nov-13 3110772-04 Normal	DMW-4 02-Jun-14 4060249-04 Normal	DMW-4 18-Aug-14 4081094-04 Normal	DMW-4 04-Nov-14 4110161-04 Normal	DMW-4 25-May-15 5051773-03 Normal	DMW-4 25-Aug-15 5081710-03 Normal
Field Results																			
Conductivity	µS/cm	1118	1021	1142	1155	1134	1201	1127	1113	1128	1137	900	1130	1100	914	1062	953	922	1043
Depth to Water	m																		
Dissolved oxygen	mg/L	1.98	1.21	2.34	0.34	0.01	4.73			2.53	4.67				2.33	0.30	3.22	2.98	2.04
Dissolved oxygen (percent)	%	16.5	10.6	20.5			40.3			23.0	39.8				20.00	2.6	27.4	25.8	17.9
Field measured depth to bottom	m																		
Flow rate - container	L/s																		
Ground Elevation	m	975	975	975	975	975	975	975	975	975	975								
Oxidation reduction potential	mV	-65	-28	-26	53	-35	97	29	83	17		235	68	204	78	77	-8	69	-5
pH		7.0	7.5	7.2	6.3	7.3	7.3	7.4	7.7	7.4	7.3	7.25	7.16	7.11	7.3	7.1	7.1	7.5	7.3
Temperature	°C	8.2	9.8	8.5	8.0	8.1	7.9	9.1	6.8	9.6	7.9	8.7	7.8	7.2	7.9	8.6	8.2	9.0	8.2
Lab Results																			
Chlorinated Hydrocarbons																			
1,2-Dichlorobenzene	mg/L								<0.0005										
1,3-Dichlorobenzene	mg/L								<0.0010										
1,4-Dichlorobenzene	mg/L								<0.0010										
1,1-Dichloroethane	mg/L								<0.0010										
1,2-Dichloroethane	mg/L								<0.0010										
1,1-Dichloroethylene	mg/L								<0.0010										
cis-1,2-Dichloroethylene	mg/L								<0.0010										
trans-1,2-Dichloroethylene	mg/L								<0.0010										
Monochlorobenzene	mg/L								<0.0010										
1,1,2,2-Tetrachloroethane	mg/L								<0.0005										
Tetrachloroethylene	mg/L								<0.0010										
1,1,1-Trichloroethane	mg/L								<0.0010										
1,1,2-Trichloroethane	mg/L								<0.0010										
Trichloroethylene	mg/L								<0.0010										
General																			
Alkalinity (bicarbonate, as CaCO3)	mg/L					481	482	480	504	432	481								
Alkalinity (carbonate, as CaCO3)	mg/L					<1	<1	<1	<1.0	<1.0	<1.0								
Alkalinity (hydroxide, as CaCO3)	mg/L					<1	<1	<1	<1.0	<1.0	<1.0								
Alkalinity (phenolphthalein, as CaCO3)	mg/L					<1	<1	<1	<1.0	<1.0	<1.0								
Alkalinity (total, as CaCO3)	mg/L	478	490	478	500	481	482	480	504	432	481	437	427	435	392	399	416	430	429
Bicarbonate Alkalinity (as HCO3)	mg/L					587	588	586	614	527	587								
Carbonate Alkalinity (as CO3)	mg/L					<1	<0.6	<0.6	<0.600	<0.600	<0.600								
Hydroxide Alkalinity (as OH)	mg/L					<1	<0.3	<0.3	<0.340	<0.340	<0.340								
Bromide	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10							<0.10	<0.10
Chemical Oxygen Demand	mg/L																		
Chloride	mg/L	40.1	39.7	42.4	51.7	38.7	47.1	50.4	42.1	12.4	52.8	22.4	16.2	16.9	20.6	19.7	17.4	12.1	13.2
Conductivity	µS/cm	1160	1150	1120	<2	1170	1160	1180	1140	1170	1170	1160	1220	1230	979	1170	1120	1220	1130
Fluoride	mg/L	1.15	1.25	1.28	1.31	1.28	1.28	1.25	1.25	0.73	1.30	0.48	0.61	0.52	0.28	0.32	0.42	0.89	0.74
Hardness, Total (dissolved as CaCO3)	mg/L	606				700	697	644	676	595		619	641	643	571	635	584		
Hardness, Total (total as CaCO3)	mg/L		649	678	645						582							619	611
pH		7.81	7.74	7.70	7.63	7.60	7.73	7.89	7.67	7.92	7.86	7.76	7.84	7.77	7.90	7.64	7.81	7.79	7.74
Sulphate	mg/L	122	133	114	116	129	124	124	126	252	108	236	270	268	150	250	213	275	232
Total organic carbon	mg/L																		
Total suspended solids	mg/L	<1	<2	<2	<3	<2	<2	<2	<2	<2.0	2.8	<1	<1	1	<1	<1	<1	<2	<2
Turbidity	NTU	4.3	1.5	3.0	4.5	4.8	1.68	1.49	2.40	0.63	5.34	0.2	0.2	0.3	5.5	0.2	0.2	0.5	0.2
Halogenated Methanes																			
Bromodichloromethane	mg/L								<0.0010										
Bromoform	mg/L								<0.0010										

Golden Refuse Disposal Site
Water Quality Results

Analyte	Unit	DMW-1b 04-Nov-14 4110161-03 Normal	DMW-1b 25-May-15 5051773-04 Normal	DMW-1b 25-Aug-15 5081710-02 Normal	DMW-1b 09-Nov-15 5110693-01 Normal	DMW-1b 03-May-16 6050336-02 Normal	DMW-1b 22-Aug-16 6081698-02 Normal	DMW-1b 14-Nov-16 6111141-04 Normal	DMW-1b 05-Apr-17 7040434-07 Normal	DMW-1b 29-Aug-17 7090074-04 Normal	DMW-1b 20-Nov-17 7111886-05 Normal	DMW-4 21-May-13 3051354-05 Normal	DMW-4 20-Aug-13 3081378-04 Normal	DMW-4 12-Nov-13 3110772-04 Normal	DMW-4 02-Jun-14 4060249-04 Normal	DMW-4 18-Aug-14 4081094-04 Normal	DMW-4 04-Nov-14 4110161-04 Normal	DMW-4 25-May-15 5051773-03 Normal	DMW-4 25-Aug-15 5081710-03 Normal
Carbon tetrachloride	mg/L								<0.0005										
Chloroform	mg/L								<0.0010										
Dibromochloromethane	mg/L								<0.0010										
Dibromomethane	mg/L								<0.0010										
Dichloromethane	mg/L								<0.0030										
Total Trihalomethanes (calculated)	mg/L								<0.0020										
Trichlorofluoromethane	mg/L								<0.0010										
Metals																			
Aluminum (dissolved)	mg/L	<0.005					<0.005	<0.005		<0.0050		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
Aluminum (total)	mg/L		0.005	<0.005	<0.05	<0.005			0.005		<0.0050							<0.005	<0.005
Antimony (dissolved)	mg/L	0.0002					<0.0001	<0.0001		<0.00020		0.0004	0.0005	0.0005	0.0004	0.0004	0.0003		
Antimony (total)	mg/L		<0.0001	<0.0001	<0.001	<0.0001			0.0003		<0.00020							0.0002	0.0003
Arsenic (dissolved)	mg/L	0.0436					0.0421	0.0407		0.00124		0.0013	0.0013	0.0014	0.0012	0.0014	0.0013		
Arsenic (total)	mg/L		0.0236	0.0489	0.042	0.0375			0.0326		0.0476							0.0014	0.0018
Barium (dissolved)	mg/L	0.026					0.025	0.024		0.0149		0.015	0.014	0.015	0.015	0.017	0.017		
Barium (total)	mg/L		0.022	0.026	<0.05	0.024			0.025		0.0246							0.017	0.016
Beryllium (dissolved)	mg/L	0.0001					<0.0001	<0.0001		<0.00010		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Beryllium (total)	mg/L		<0.0001	0.0001	<0.001	0.0001			<0.0001		0.00011							<0.0001	<0.0001
Bismuth (dissolved)	mg/L	<0.0001					<0.0001	<0.0001		<0.00010		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Bismuth (total)	mg/L		<0.0001	<0.0001	<0.001	<0.0001			<0.0001		<0.00010							<0.0001	<0.0001
Boron (dissolved)	mg/L	0.134					0.191	0.172		0.386		0.263	0.415	0.465	0.070	0.286	0.218		
Boron (total)	mg/L		0.146	0.139	0.14	0.146			0.137		0.101							0.659	0.392
Cadmium (dissolved)	mg/L	0.00001					0.00003	0.00001		<0.000010		0.00002	0.00003	<0.00001	0.00002	0.00001	0.00002		
Cadmium (total)	mg/L		<0.00001	<0.00001	<0.0001	<0.00001			<0.00001		<0.000010							0.00001	<0.00001
Calcium (dissolved)	mg/L	70.5					74.5	70.8		75.4		78.2	80.7	82.5	75.1	86.4	79.9		
Calcium (total)	mg/L		74.3	75.8	75.1	79.2			77.3		65.9							79.0	81.9
Chromium (dissolved)	mg/L	<0.0005					<0.0005	<0.0005		<0.00050		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Chromium (total)	mg/L		<0.0005	<0.0005	<0.005	<0.0005			<0.0005		<0.00050							<0.0005	<0.0005
Cobalt (dissolved)	mg/L	0.00008					0.00007	<0.00005		0.00075		0.00084	0.00075	0.00059	0.00126	0.00133	0.00106		
Cobalt (total)	mg/L		0.00014	<0.00005	<0.0005	<0.00005			0.00050		<0.00010							0.00079	0.00083
Copper (dissolved)	mg/L	0.0004					0.0004	0.0185		0.00361		0.0036	0.0030	0.0024	0.0668	0.0060	0.0065		
Copper (total)	mg/L		0.0078	0.0009	<0.002	0.0003			0.0079		0.00073							0.0100	0.0027
Iron (dissolved)	mg/L	0.404					0.239	0.368		0.014		0.014	0.014	0.013	0.011	0.021	0.014		
Iron (total)	mg/L		0.23	0.38	0.42	0.55			0.43		0.437							0.04	0.02
Lead (dissolved)	mg/L	<0.0001					<0.0001	0.0003		<0.00020		0.0003	0.0004	0.0002	0.0003	0.0002	0.0003		
Lead (total)	mg/L		0.0022	0.0003	<0.001	0.0003			0.0002		<0.00020							0.0004	0.0003
Lithium (dissolved)	mg/L	0.0252					0.0222	0.0240		0.0477		0.0347	0.0478	0.0516	0.0178	0.0385	0.0317		
Lithium (total)	mg/L		0.0243	0.0244	0.026	0.0265			0.0236		0.0217							0.0696	0.0462
Magnesium (dissolved)	mg/L	104					124	113		98.8		103	107	106	93.0	102	93.3		
Magnesium (total)	mg/L		112	119	111	122			117		101							102	98.6
Manganese (dissolved)	mg/L	0.0048					0.0046	0.0041		0.00401		0.0039	0.0042	0.0040	0.0021	0.0127	0.0043		
Manganese (total)	mg/L		0.0047	0.0046	0.005	0.0057			0.0110		0.00419							0.0048	0.0037
Mercury (dissolved)	mg/L	<0.00002					<0.00002	<0.00002		<0.000010		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002		
Mercury (total)	mg/L		<0.00002		<0.00002	<0.00002			<0.00002		<0.000010							<0.00002	
Molybdenum (dissolved)	mg/L	0.0004					0.0004	0.0004		0.00058		0.0008	0.0004	0.0006	0.0014	0.0008	0.0010		
Molybdenum (total)	mg/L		0.0004	0.0004	<0.001	0.0003			0.0003		0.00035							0.0006	0.0007
Nickel (dissolved)	mg/L	0.0016					0.0017	0.0022		0.00115		0.0018	0.0015	0.0012	0.0027	0.0026	0.0019		
Nickel (total)	mg/L		0.0006	0.0026	<0.002	0.0016			0.0020		0.00204							<0.0002	0.0025
Selenium (dissolved)	mg/L	<0.0005					<0.0005	<0.0005		<0.00050		<0.0005	<0.0005	<0.0005	0.0008	0.0007	0.0007		
Selenium (total)	mg/L		<0.0005	<0.0005	<0.005	<0.0005			<0.0005		<0.00050							<0.0005	<0.0005
Silicon (dissolved, as Si)	mg/L	8.4					8.0	8.3		6.4		7.2	7.0	6.6	7.4	7.3	7.9		
Silicon (total, as Si)	mg/L		7.9	9.0	8	8.3			7.5		7.6							7.0	7.2
Silver (dissolved)	mg/L	<0.00005					<0.00005	<0.00005		<0.000050		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005		

Golden Refuse Disposal Site
Water Quality Results

Analyte	Unit	DMW-1b 04-Nov-14 4110161-03 Normal	DMW-1b 25-May-15 5051773-04 Normal	DMW-1b 25-Aug-15 5081710-02 Normal	DMW-1b 09-Nov-15 5110693-01 Normal	DMW-1b 03-May-16 6050336-02 Normal	DMW-1b 22-Aug-16 6081698-02 Normal	DMW-1b 14-Nov-16 6111141-04 Normal	DMW-1b 05-Apr-17 7040434-07 Normal	DMW-1b 29-Aug-17 7090074-04 Normal	DMW-1b 20-Nov-17 7111886-05 Normal	DMW-4 21-May-13 3051354-05 Normal	DMW-4 20-Aug-13 3081378-04 Normal	DMW-4 12-Nov-13 3110772-04 Normal	DMW-4 02-Jun-14 4060249-04 Normal	DMW-4 18-Aug-14 4081094-04 Normal	DMW-4 04-Nov-14 4110161-04 Normal	DMW-4 25-May-15 5051773-03 Normal	DMW-4 25-Aug-15 5081710-03 Normal
Silver (total)	mg/L		0.00005	0.00163	<0.0005	<0.00005			<0.00005		<0.000050							0.00005	0.00129
Sodium (dissolved)	mg/L	30.1					32.8	29.8		47.5		34.2	48.8	51.0	20.2	34.8	31.6		
Sodium (total)	mg/L		26.9	33.2	29.7	28.7			26.3		26.9							70.3	46.9
Strontium (dissolved)	mg/L	1.71					1.96	1.79		4.33		4.26	5.03	5.11	2.07	4.53	3.80		
Strontium (total)	mg/L		1.68	1.99	1.74	1.82			1.78		1.85							6.04	5.09
Sulphur (dissolved)	mg/L	47					52	44		80.3		80	95	88	58	87	80		
Sulphur (total)	mg/L		46	51	37	45			43		42.6							98	87
Tellurium (dissolved)	mg/L	<0.0002					<0.0002	<0.0002		<0.00050		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
Tellurium (total)	mg/L		<0.0002	<0.0002	<0.002	<0.0002			<0.0002		<0.00050							<0.0002	<0.0002
Thallium (dissolved)	mg/L	<0.00002					<0.00002	<0.00002		<0.000020		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002		
Thallium (total)	mg/L		<0.00002	<0.00002	<0.0002	<0.00002			<0.00002		<0.000020							<0.00002	<0.00002
Thorium (dissolved)	mg/L	<0.0001					<0.0001	<0.0001		<0.00010		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Thorium (total)	mg/L		<0.0001	<0.0001	<0.001	<0.0001			<0.0001		<0.00010							<0.0001	<0.0001
Tin (dissolved)	mg/L	0.0003					0.0002	<0.0002		<0.00020		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
Tin (total)	mg/L		0.0004	<0.0002	<0.002	<0.0002			<0.0002		<0.00020							0.0003	<0.0002
Titanium (dissolved)	mg/L	<0.005					<0.005	<0.005		<0.0050		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
Titanium (total)	mg/L		<0.005	<0.005	<0.05	<0.005			<0.005		<0.0050							<0.005	<0.005
Tungsten (dissolved)	mg/L																		
Tungsten (total)	mg/L										<0.0010								
Uranium (dissolved)	mg/L	0.00009					0.00005	0.00007		0.00103		0.00155	0.00115	0.00100	0.00262	0.00152	0.00175		
Uranium (total)	mg/L		0.00011	0.00007	<0.0002	0.00013			0.00020		0.000068							0.00051	0.00108
Vanadium (dissolved)	mg/L	<0.001					<0.001	<0.001		<0.0010		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
Vanadium (total)	mg/L		<0.001	<0.001	<0.01	<0.001			<0.001		<0.0010							<0.001	<0.001
Zinc (dissolved)	mg/L	0.005					<0.004	0.067		0.0380		0.029	0.046	0.019	0.045	0.028	0.032		
Zinc (total)	mg/L		<0.004	<0.004	<0.04	<0.004			0.017		0.0084							0.030	0.030
Zirconium (dissolved)	mg/L	0.0015					0.0019	0.0015		0.00056		0.0007	0.0007	0.0007	0.0004	0.0006	0.0006		
Zirconium (total)	mg/L		0.0012	0.0019	0.001	0.0014			0.0012		0.00161							0.0007	0.0008
Microbiological																			
E. coli (counts)	CFU/100 mL																		
E. coli (MPN)	MPN/100 mL																		
Fecal coliforms (counts)	CFU/100 mL																		
Fecal coliforms (MPN)	MPN/100 mL																		
Total coliforms (counts)	CFU/100 mL																		
Total coliforms (MPN)	MPN/100 mL																		
Miscellaneous Organic Substances																			
Chloroethane	mg/L								<0.0020										
1,2-Dibromoethane	mg/L								<0.0002										
1,2-Dichloropropane	mg/L								<0.0010										
1,3-Dichloropropene	mg/L								<0.0010										
Methyl tert-butyl ether (MTBE)	mg/L								<0.0010										
VHw6-10	mg/L																		
Vinyl chloride	mg/L								<0.0010										
VPHw	mg/L																		
Monocyclic Aromatic Hydrocarbons (MAHs)																			
Benzene	mg/L								<0.0005										
Ethylbenzene	mg/L								<0.0010										
Styrene	mg/L								<0.0010										
Toluene	mg/L								<0.0010										
Xylenes	mg/L								<0.0020										
Nutrients																			

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	DMW-1b 04-Nov-14 4110161-03 Normal	DMW-1b 25-May-15 5051773-04 Normal	DMW-1b 25-Aug-15 5081710-02 Normal	DMW-1b 09-Nov-15 5110693-01 Normal	DMW-1b 03-May-16 6050336-02 Normal	DMW-1b 22-Aug-16 6081698-02 Normal	DMW-1b 14-Nov-16 6111141-04 Normal	DMW-1b 05-Apr-17 7040434-07 Normal	DMW-1b 29-Aug-17 7090074-04 Normal	DMW-1b 20-Nov-17 7111886-05 Normal	DMW-4 21-May-13 3051354-05 Normal	DMW-4 20-Aug-13 3081378-04 Normal	DMW-4 12-Nov-13 3110772-04 Normal	DMW-4 02-Jun-14 4060249-04 Normal	DMW-4 18-Aug-14 4081094-04 Normal	DMW-4 04-Nov-14 4110161-04 Normal	DMW-4 25-May-15 5051773-03 Normal	DMW-4 25-Aug-15 5081710-03 Normal
Ammonia (total, as N)	mg/L	0.240	0.234	0.210	0.276	0.196	0.251	0.228	0.239	0.758	0.262	0.596	0.952	1.07	0.028	0.814	0.341	1.26	0.816
Nitrate (as N)	mg/L	0.397	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.175	<0.010	0.181	0.135	<0.010	0.647	0.443	0.602	0.530	0.414
Nitrate + Nitrite (as N)	mg/L																		
Nitrate + Nitrite (as N) (calculated)	mg/L	0.397	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.175	<0.014	0.181	0.135	<0.014	0.647	0.443	0.602	0.530	0.414
Nitrite (as N)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total kjeldahl nitrogen	mg/L																		
Orthophosphate (dissolved, as P)	mg/L		<0.01	<0.01														<0.01	<0.01
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L	<0.02					<0.02	0.24		<0.050		<0.02	<0.02	<0.02	<0.02	0.02	<0.02		
Phosphorus (total, by ICPMS/ICPOES)	mg/L		<0.020	0.08	<0.2	<0.02			<0.05		<0.050							<0.020	<0.02
Phosphorus (total, APHA 4500-P)	mg/L																		
Potassium (dissolved)	mg/L	4.94					5.62	5.20		8.08		7.63	9.49	9.36	3.66	7.73	6.80		
Potassium (total)	mg/L		4.93	5.94	5.1	5.10			4.73		4.63							11.7	9.42

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	DMW-4 09-Nov-15 5110693-02 Normal	DMW-4 03-May-16 6050336-03 Normal	DMW-4 22-Aug-16 6081698-03 Normal	DMW-4 14-Nov-16 6111141-05 Normal	DMW-4 05-Apr-17 7040434-06 Normal	DMW-4 29-Aug-17 7090074-03 Normal	DMW-4 20-Nov-17 7111886-06 Normal	MW09-06D 25-May-09 K9E0816-03	MW09-06D 04-Nov-09 K9K0184-01	MW09-06D 09-Feb-10 K0B0397-02	MW09-06D 15-Jun-10 K0F0788-04	MW09-6S 25-May-09 K9E0816-02	MW09-6S 04-Nov-09 K9K0184-02	MW09-6S 09-Feb-10 K0B0397-01	MW09-6S 15-Jun-10 K0F0788-03	MW09-6S 16-Nov-10 K0K0729-01	MW09-6S 09-May-11 K1E0403-03	MW09-6S 10-Aug-11 K1H0536-02
Field Results																			
Conductivity	µS/cm	1109	1271	1139	790	927	1159	1187	6700	4700	4400	4300	4600	4700	4400	4430	6600	4200	3600
Depth to Water	m								32.972	34	32.69	33.55	32.619	33	33.49	32.68	32.70	31.618	32.625
Dissolved oxygen	mg/L	0.40	0	9.12	4.63		0.54	4.21	0.83	1.92			2.21	1.07					
Dissolved oxygen (percent)	%			36.6	40.0		5.0	36.1											
Field measured depth to bottom	m																		
Flow rate - container	L/s																		
Ground Elevation	m												920	920	920	920	920	920	920
Oxidation reduction potential	mV	37	80	206	152	235	-47					73.0				73.0	173	175	67
pH		6.3	7.1	7.3	7.3	7.6	7.4	7.2	6.78	6.86	6.76	7.01	6.87	6.84	6.79	6.86	6.91	6.75	6.87
Temperature	°C	8.0	8.5	8.2	7.7	7.8	9.5	8.0	10.8	9.4	9.4	11.3	12.5	10.5	10.9	11.6	10.0	12.2	12.4
Lab Results																			
Chlorinated Hydrocarbons																			
1,2-Dichlorobenzene	mg/L					<0.0005													
1,3-Dichlorobenzene	mg/L					<0.0010													
1,4-Dichlorobenzene	mg/L					<0.0010													
1,1-Dichloroethane	mg/L					<0.0010													
1,2-Dichloroethane	mg/L					<0.0010													
1,1-Dichloroethylene	mg/L					<0.0010													
cis-1,2-Dichloroethylene	mg/L					<0.0010													
trans-1,2-Dichloroethylene	mg/L					<0.0010													
Monochlorobenzene	mg/L					<0.0010													
1,1,2,2-Tetrachloroethane	mg/L					<0.0005													
Tetrachloroethylene	mg/L					<0.0010													
1,1,1-Trichloroethane	mg/L					<0.0010													
1,1,2-Trichloroethane	mg/L					<0.0010													
Trichloroethylene	mg/L					<0.0010													
General																			
Alkalinity (bicarbonate, as CaCO3)	mg/L		419	410	396	399	489	439											
Alkalinity (carbonate, as CaCO3)	mg/L		<1	<1	<1	<1.0	<1.0	<1.0											
Alkalinity (hydroxide, as CaCO3)	mg/L		<1	<1	<1	<1.0	<1.0	<1.0											
Alkalinity (phenolphthalein, as CaCO3)	mg/L		<1	<1	<1	<1.0	<1.0	<1.0											
Alkalinity (total, as CaCO3)	mg/L	422	419	410	396	399	489	439	1380	762	768	787	1590	780	794	778	757	801	800
Bicarbonate Alkalinity (as HCO3)	mg/L		511	500	483	486	596	536											
Carbonate Alkalinity (as CO3)	mg/L		<1	<0.6	<0.6	<0.600	<0.600	<0.600											
Hydroxide Alkalinity (as OH)	mg/L		<1	<0.3	<0.3	<0.340	<0.340	<0.340											
Bromide	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10											
Chemical Oxygen Demand	mg/L																		
Chloride	mg/L	15.7	15.7	15.1	14.5	12.8	46.5	11.7	688	574	715	665	674	604	713	667	732	556	632
Conductivity	µS/cm	1090	1210	1100	951	955	1160	1190	5110	4820	4790	4720	5090	4840	4780	4680	4640	4250	4230
Fluoride	mg/L	0.48	0.69	0.49	0.42	0.34	1.45	0.79											
Hardness, Total (dissolved as CaCO3)	mg/L		733	625	522	515	649		1790	1770	1810	1550	1780	1770	1810	1580	1710	1660	1510
Hardness, Total (total as CaCO3)	mg/L	587						565											
pH		7.72	7.66	7.72	7.87	7.76	7.87	7.95	7.4	7.28	7.32	7.55	7.4	7.29	7.49	7.57	7.35	7.50	7.39
Sulphate	mg/L	196	263	223	135	153	122	246	788	783	945	873	781	824	925	861	781	606	688
Total organic carbon	mg/L																		
Total suspended solids	mg/L	<3	2	<2	<2	<2	2.0	<2.0	2640	34	1110	1690	2320	1720	751	1090	1020	228	96
Turbidity	NTU	0.2	0.2	0.30	0.24	0.25	7.35	0.37	>4000	9.1	1600	3500	2400	2900	830	1500	730	188	79
Halogenated Methanes																			
Bromodichloromethane	mg/L					<0.0010													
Bromoform	mg/L					<0.0010													

Golden Refuse Disposal Site
Water Quality Results

Analyte	Unit	DMW-4 09-Nov-15 5110693-02 Normal	DMW-4 03-May-16 6050336-03 Normal	DMW-4 22-Aug-16 6081698-03 Normal	DMW-4 14-Nov-16 6111141-05 Normal	DMW-4 05-Apr-17 7040434-06 Normal	DMW-4 29-Aug-17 7090074-03 Normal	DMW-4 20-Nov-17 7111886-06 Normal	MW09-06D 25-May-09 K9E0816-03	MW09-06D 04-Nov-09 K9K0184-01	MW09-06D 09-Feb-10 K0B0397-02	MW09-06D 15-Jun-10 K0F0788-04	MW09-6S 25-May-09 K9E0816-02	MW09-6S 04-Nov-09 K9K0184-02	MW09-6S 09-Feb-10 K0B0397-01	MW09-6S 15-Jun-10 K0F0788-03	MW09-6S 16-Nov-10 K0K0729-01	MW09-6S 09-May-11 K1E0403-03	MW09-6S 10-Aug-11 K1H0536-02
Carbon tetrachloride	mg/L					<0.0005													
Chloroform	mg/L					<0.0010													
Dibromochloromethane	mg/L					<0.0010													
Dibromomethane	mg/L					<0.0010													
Dichloromethane	mg/L					<0.0030													
Total Trihalomethanes (calculated)	mg/L					<0.0020													
Trichlorofluoromethane	mg/L					<0.0010													
Metals																			
Aluminum (dissolved)	mg/L			<0.005	<0.005		<0.0050		0.006	<0.005	0.23	<0.005	0.012	<0.005	0.009	0.006	<0.005	<0.005	<0.005
Aluminum (total)	mg/L	<0.05	<0.005			<0.005		<0.0050											
Antimony (dissolved)	mg/L			<0.0001	0.0002		<0.00020		0.0003	0.0003	0.0005	0.0005	0.0006	0.0002	0.0006	0.0004	0.0010	0.0006	0.0004
Antimony (total)	mg/L	<0.001	0.0002			0.0001		<0.00020											
Arsenic (dissolved)	mg/L			0.0010	0.0009		0.0421		0.0104	0.0029	0.003	0.0048	0.0033	0.0028	0.0021	0.0044	0.0057	<0.0005	<0.0005
Arsenic (total)	mg/L	<0.005	<0.0005			0.0010		0.00149											
Barium (dissolved)	mg/L			0.017	0.015		0.0223		0.101	0.0566	0.0822	0.0620	0.087	0.0566	0.0831	0.0676	0.0740	0.0595	0.059
Barium (total)	mg/L	<0.05	0.019			0.016		0.0165											
Beryllium (dissolved)	mg/L			<0.0001	<0.0001		0.00011		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Beryllium (total)	mg/L	<0.001	<0.0001			<0.0001		<0.00010											
Bismuth (dissolved)	mg/L			<0.0001	<0.0001		<0.00010		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth (total)	mg/L	<0.001	<0.0001			<0.0001		<0.00010											
Boron (dissolved)	mg/L			0.267	0.092		0.148		1.12	1.05	1.28	1.08	1.09	0.921	1.24	1.14	1.48	1.31	1.18
Boron (total)	mg/L	0.20	0.444			0.106		0.386											
Cadmium (dissolved)	mg/L			0.00003	0.00001		<0.000010		0.00006	0.00001	0.00002	0.00002	0.00005	0.00003	0.00004	0.00002	0.00002	0.00018	0.00001
Cadmium (total)	mg/L	<0.0001	<0.00001			<0.00001		<0.000010											
Calcium (dissolved)	mg/L			77.8	68.9		70.7		235	197	217	186	220	192	215	191	212	194	177
Calcium (total)	mg/L	81.6	97.0			73.2		76.1											
Chromium (dissolved)	mg/L			<0.0005	<0.0005		<0.00050		0.006	0.0065	0.0342	0.0109	0.004	0.0082	0.0341	0.0117	0.0019	<0.0005	<0.0005
Chromium (total)	mg/L	<0.005	<0.0005			<0.0005		<0.00050											
Cobalt (dissolved)	mg/L			0.00091	0.00088		<0.00010		0.00298	0.00108	0.00151	0.00142	0.00415	0.0022	0.00258	0.00228	0.00140	0.00124	0.00116
Cobalt (total)	mg/L	0.0009	0.00125			0.00077		0.00068											
Copper (dissolved)	mg/L			0.0043	0.0593		0.00044		0.008	0.0055	0.0143	0.0097	0.0091	0.0056	0.0157	0.0077	0.0048	0.0019	0.0015
Copper (total)	mg/L	0.006	0.0071			0.0394		0.00181											
Iron (dissolved)	mg/L			0.011	<0.010		0.575		0.23	0.204	0.402	0.396	0.219	0.196	0.195	0.425	0.396	<0.010	<0.01
Iron (total)	mg/L	<0.10	0.01			0.03		0.037											
Lead (dissolved)	mg/L			<0.0001	0.0004		<0.00020		<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001
Lead (total)	mg/L	<0.001	0.0003			0.0002		<0.00020											
Lithium (dissolved)	mg/L			0.0285	0.0173		0.0245		0.0341	0.0359	0.054	0.0477	0.0305	0.0278	0.0574	0.0488	0.0420	0.0377	0.0364
Lithium (total)	mg/L	0.030	0.0547			0.0192		0.0508											
Magnesium (dissolved)	mg/L			105	85.0		115		292	310	308	263	299	314	310	269	286	285	259
Magnesium (total)	mg/L	93.1	119			80.5		91.1											
Manganese (dissolved)	mg/L			0.0039	0.0015		0.00535		0.242	0.0862	0.115	0.113	0.518	0.212	0.168	0.191	0.108	0.0937	0.0894
Manganese (total)	mg/L	0.004	0.0061			0.0017		0.00377											
Mercury (dissolved)	mg/L			<0.00002	<0.00002		<0.000010		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00002	<0.00002
Mercury (total)	mg/L	<0.00002	<0.00002			<0.00002		<0.000010											
Molybdenum (dissolved)	mg/L			0.0010	0.0012		0.00031		0.0006	0.0003	0.0003	0.0003	0.0023	0.0009	0.0004	0.0006	0.0005	0.0003	0.0003
Molybdenum (total)	mg/L	0.001	0.0009			0.0014		0.00049											
Nickel (dissolved)	mg/L			0.0014	0.0017		0.00179		0.0163	0.0085	0.0112	0.0132	0.0148	0.0094	0.0115	0.0137	0.0154	0.0070	0.0067
Nickel (total)	mg/L	<0.002	0.0018			0.0017		0.00105											
Selenium (dissolved)	mg/L			0.0005	0.0007		<0.00050		<0.0003	<0.0003	<0.0003	0.0018	<0.0003	<0.0003	<0.0003	0.0006	0.0018	0.0006	0.0006
Selenium (total)	mg/L	<0.005	<0.0005			0.0006		<0.00050											
Silicon (dissolved, as Si)	mg/L			6.8	7.6		7.2		10	10.1	22.4	8.42	9.21	9.1	17.6	10.8	8.95	12.4	11.5
Silicon (total, as Si)	mg/L	7	8.1			7.3		6.4											
Silver (dissolved)	mg/L			<0.00005	<0.00005		<0.000050		<0.00005	<0.00005	<0.00005	<0.00005	0.00005	<0.00005	<0.00005	0.00006	0.00014	<0.00005	0.00012

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	DMW-4 09-Nov-15 5110693-02 Normal	DMW-4 03-May-16 6050336-03 Normal	DMW-4 22-Aug-16 6081698-03 Normal	DMW-4 14-Nov-16 6111141-05 Normal	DMW-4 05-Apr-17 7040434-06 Normal	DMW-4 29-Aug-17 7090074-03 Normal	DMW-4 20-Nov-17 7111886-06 Normal	MW09-06D 25-May-09 K9E0816-03	MW09-06D 04-Nov-09 K9K0184-01	MW09-06D 09-Feb-10 K0B0397-02	MW09-06D 15-Jun-10 K0F0788-04	MW09-6S 25-May-09 K9E0816-02	MW09-6S 04-Nov-09 K9K0184-02	MW09-6S 09-Feb-10 K0B0397-01	MW09-6S 15-Jun-10 K0F0788-03	MW09-6S 16-Nov-10 K0K0729-01	MW09-6S 09-May-11 K1E0403-03	MW09-6S 10-Aug-11 K1H0536-02
Silver (total)	mg/L	<0.0005	<0.00005			<0.00005		<0.000050											
Sodium (dissolved)	mg/L			33.4	17.0		27.9		348	379	384	314	351	378	380	323	344	322	298
Sodium (total)	mg/L	27.2	50.0			21.1		46.4											
Strontium (dissolved)	mg/L			4.11	2.09		1.59		2.53	2.21	2.04	2.04	2.42	2.09	2.07	2.12	2.25	1.95	1.88
Strontium (total)	mg/L	3.55	5.47			2.30		5.49											
Sulphur (dissolved)	mg/L			83	48		43.0												
Sulphur (total)	mg/L	67	98			46		88.3											
Tellurium (dissolved)	mg/L			<0.0002	<0.0002		<0.00050		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tellurium (total)	mg/L	<0.002	<0.0002			<0.0002		<0.00050											
Thallium (dissolved)	mg/L			<0.00002	<0.00002		<0.000020		0.00009	0.00006	0.00006	0.00007	0.00008	0.00006	0.00007	0.00007	0.00007	0.00006	0.00005
Thallium (total)	mg/L	<0.0002	<0.00002			<0.00002		<0.000020											
Thorium (dissolved)	mg/L			<0.0001	<0.0001		<0.00010			<0.0001	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thorium (total)	mg/L	<0.001	<0.0001			<0.0001		<0.00010											
Tin (dissolved)	mg/L			<0.0002	<0.0002		<0.00020		0.0002	0.0002	0.0002	0.0002	0.0003	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002
Tin (total)	mg/L	<0.002	<0.0002			<0.0002		<0.00020											
Titanium (dissolved)	mg/L			<0.005	<0.005		<0.0050		<0.005	0.006	0.017	0.008	<0.005	0.005	0.005	0.008	0.014	<0.005	<0.005
Titanium (total)	mg/L	<0.05	<0.005			<0.005		<0.0050											
Tungsten (dissolved)	mg/L																		
Tungsten (total)	mg/L							<0.0010											
Uranium (dissolved)	mg/L			0.00158	0.00206		0.000121		0.00761	0.00751	0.00639	0.00741	0.00886	0.00757	0.007	0.00757	0.00790	0.00607	0.00602
Uranium (total)	mg/L	0.0017	0.00134			0.00225		0.000895											
Vanadium (dissolved)	mg/L			<0.001	<0.001		<0.0010		0.0019	0.002	0.016	0.0062	0.0014	0.0026	0.0134	0.0090	<0.0010	<0.001	<0.001
Vanadium (total)	mg/L	<0.01	<0.001			<0.001		<0.0010											
Zinc (dissolved)	mg/L			0.015	0.022		0.0061		0.0063	0.0036	0.0086	0.0047	0.0063	0.0029	0.0103	0.0050	0.0044	0.0040	<0.004
Zinc (total)	mg/L	<0.04	0.018			0.024		0.0185											
Zirconium (dissolved)	mg/L			0.0005	0.0003		0.00140		0.0008	0.0002	0.0004	0.0002	0.001	0.0005	0.0003	0.0003	0.0002	0.0002	0.0001
Zirconium (total)	mg/L	<0.001	0.0008			0.0004		0.00058											
Microbiological																			
E. coli (counts)	CFU/100 mL																		
E. coli (MPN)	MPN/100 mL																		
Fecal coliforms (counts)	CFU/100 mL																		
Fecal coliforms (MPN)	MPN/100 mL																		
Total coliforms (counts)	CFU/100 mL																		
Total coliforms (MPN)	MPN/100 mL																		
Miscellaneous Organic Substances																			
Chloroethane	mg/L					<0.0020													
1,2-Dibromoethane	mg/L					<0.0002													
1,2-Dichloropropane	mg/L					<0.0010													
1,3-Dichloropropene	mg/L					<0.0010													
Methyl tert-butyl ether (MTBE)	mg/L					<0.0010													
VHw6-10	mg/L																		
Vinyl chloride	mg/L					<0.0010													
VPHw	mg/L																		
Monocyclic Aromatic Hydrocarbons (MAHs)																			
Benzene	mg/L					<0.0005													
Ethylbenzene	mg/L					<0.0010													
Styrene	mg/L					<0.0010													
Toluene	mg/L					<0.0010													
Xylenes	mg/L					<0.0020													
Nutrients																			

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	DMW-4 09-Nov-15 5110693-02 Normal	DMW-4 03-May-16 6050336-03 Normal	DMW-4 22-Aug-16 6081698-03 Normal	DMW-4 14-Nov-16 6111141-05 Normal	DMW-4 05-Apr-17 7040434-06 Normal	DMW-4 29-Aug-17 7090074-03 Normal	DMW-4 20-Nov-17 7111886-06 Normal	MW09-06D 25-May-09 K9E0816-03	MW09-06D 04-Nov-09 K9K0184-01	MW09-06D 09-Feb-10 K0B0397-02	MW09-06D 15-Jun-10 K0F0788-04	MW09-6S 25-May-09 K9E0816-02	MW09-6S 04-Nov-09 K9K0184-02	MW09-6S 09-Feb-10 K0B0397-01	MW09-6S 15-Jun-10 K0F0788-03	MW09-6S 16-Nov-10 K0K0729-01	MW09-6S 09-May-11 K1E0403-03	MW09-6S 10-Aug-11 K1H0536-02
Ammonia (total, as N)	mg/L	0.283	0.814	0.336	0.036	0.024	0.216	1.06	0.29	0.08	0.3	0.09	0.54	0.26	0.44	0.26	0.13	0.20	0.18
Nitrate (as N)	mg/L	0.725	0.488	0.479	0.511	0.494	0.012	0.138	62.6	56.4	67.7	61.4	62	60	66.9	62.3	55.0	53.2	66.5
Nitrate + Nitrite (as N)	mg/L																		
Nitrate + Nitrite (as N) (calculated)	mg/L	0.725	0.488	0.479	0.511	0.494	<0.014	0.138	62.6	56.4	67.7	61.4	62	60	66.9	62.3	55.0	53.2	66.5
Nitrite (as N)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	0.02	0.03	<0.01	<0.01	<0.01
Total kjeldahl nitrogen	mg/L																		
Orthophosphate (dissolved, as P)	mg/L																		
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L			<0.02	<0.02		<0.050		0.039	<0.020	0.03	<0.020	0.043	0.02	0.031	0.024	<0.020	<0.020	<0.02
Phosphorus (total, by ICPMS/ICPOES)	mg/L	<0.2	<0.02			<0.05		<0.050											
Phosphorus (total, APHA 4500-P)	mg/L																		
Potassium (dissolved)	mg/L			7.23	4.01		4.69		131	149	153	147	109	133	153	146	157	167	160
Potassium (total)	mg/L	6.2	9.74			4.15		8.59											

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	MW09-6S 18-Oct-11 K1J0685-01	MW09-6S 24-May-12 2051369-03 Normal	MW09-6S 22-Aug-12 2081484-01 Normal	MW09-6S 20-Nov-12 2111131-01 Normal	MW09-6S 21-May-13 3051354-01 Normal	MW09-6S 20-Aug-13 3081378-01 Normal	MW09-6S 12-Nov-13 3110772-01 Normal	MW09-6S 02-Jun-14 4060249-06 Normal	MW09-6S 18-Aug-14 4081094-06 Normal	MW09-6S 04-Nov-14 4110161-06 Normal	MW09-6S 25-May-15 5051773-06 Normal	MW09-6S 25-Aug-15 5081710-04 Normal	MW09-6S 09-Nov-15 5110693-03 Normal	MW09-6S 03-May-16 6050336-01 Normal	MW09-6S 22-Aug-16 6081698-06 Duplicate	MW09-6S 22-Aug-16 6081698-07 Duplicate	MW09-6S 22-Aug-16 6081698-01 Normal	MW09-6S 14-Nov-16 6111141-03 Normal
Field Results																			
Conductivity	µS/cm	4000	4100	4600	480	3300	4900	3700	4240	4030	4610	4710	4550	4530	4700	4520	4520	4520	2270
Depth to Water	m	32.625	32.590	32.605	32.624	32.629	32.640	32.651	32.60	32.61	32.60	32.67	32.78	32.74	32.76	32.59	32.59	32.59	32.57
Dissolved oxygen	mg/L								0.28	1.56	1.07	1.36	1.74	0.95	0.46	0.43	0.43	0.43	1.98
Dissolved oxygen (percent)	%								2.8	14.08	10.0	13.6	17.2			4.1	4.1	4.1	18.4
Field measured depth to bottom	m																		
Flow rate - container	L/s																		
Ground Elevation	m	920	920	920	920	920	920	920	920	920	920	920	920	920	920	920	920	920	920
Oxidation reduction potential	mV	167	135	210	164	231	228	-24	96	116	44	-7	-55	45	151	182	182	182	186
pH		6.73	6.86	6.97	6.9	6.87	6.63	6.64	4.8	7.3	6.7	6.5	6.7	6.0	6.7	6.7	6.7	6.7	7.0
Temperature	°C	11.1	11.2	12.5	12.2	12.4	12.1	12.2	13.0	13.0	12.3	14.1	12.8	12.5	12.5	13.5	13.5	13.5	12.2
Lab Results																			
Chlorinated Hydrocarbons																			
1,2-Dichlorobenzene	mg/L																		
1,3-Dichlorobenzene	mg/L																		
1,4-Dichlorobenzene	mg/L																		
1,1-Dichloroethane	mg/L																		
1,2-Dichloroethane	mg/L																		
1,1-Dichloroethylene	mg/L																		
cis-1,2-Dichloroethylene	mg/L																		
trans-1,2-Dichloroethylene	mg/L																		
Monochlorobenzene	mg/L																		
1,1,2,2-Tetrachloroethane	mg/L																		
Tetrachloroethylene	mg/L																		
1,1,1-Trichloroethane	mg/L																		
1,1,2-Trichloroethane	mg/L																		
Trichloroethylene	mg/L																		
General																			
Alkalinity (bicarbonate, as CaCO3)	mg/L														857	868	867	878	907
Alkalinity (carbonate, as CaCO3)	mg/L														<1	<1	<1	<1	<1
Alkalinity (hydroxide, as CaCO3)	mg/L														<1	<1	<1	<1	<1
Alkalinity (phenolphthalein, as CaCO3)	mg/L														<1	<1	<1	<1	<1
Alkalinity (total, as CaCO3)	mg/L	784	805	813	790	902	771	798	818	802	832	855	865	897	857	868	867	878	907
Bicarbonate Alkalinity (as HCO3)	mg/L														1050	1060	1060	1070	1110
Carbonate Alkalinity (as CO3)	mg/L														<1	<0.6	<0.6	<0.6	<0.6
Hydroxide Alkalinity (as OH)	mg/L														<1	<0.3	<0.3	<0.3	<0.3
Bromide	mg/L											0.47	1.09	1.48	0.13	3.02	3.02	2.81	1.14
Chemical Oxygen Demand	mg/L																		
Chloride	mg/L	621	599	587	709	669	662	662	650	491	529	594	549	627	605	542	526	529	497
Conductivity	µS/cm	4320	4380	4670	5040	5020	5150	5220	4840	4750	4850	4640	4520	4570	4650	4580	4590	4480	4430
Fluoride	mg/L		0.11	0.31	0.14	0.12	0.14	<0.10	<0.10	0.11	0.25	0.14	0.10	0.23	0.17	0.15	0.17	0.16	0.33
Hardness, Total (dissolved as CaCO3)	mg/L	1460	1720	1720	1810	1980	2140	2010	1990	1920	1880	1870	1890	1850	1850	1930	1880	1810	1690
Hardness, Total (total as CaCO3)	mg/L																		
pH		7.35	7.45	7.35	6.96	7.40	7.46	7.36	7.65	7.39	7.49	7.37	7.34	7.30	7.55	7.40	7.43	7.42	7.68
Sulphate	mg/L	701	719	787	893	814	910	884	858	784	879	950	878	905	903	874	848	851	867
Total organic carbon	mg/L																		
Total suspended solids	mg/L	127	326	321	42	1080	176	140	19	66	292	22	7	226	<2	2	5	<2	334
Turbidity	NTU	155	437	267	32.2	448	163	84.6	3.7	47.2	196	6.9	1.6	205	1.6	1.82	1.99	1.89	220
Halogenated Methanes																			
Bromodichloromethane	mg/L																		
Bromoform	mg/L																		

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	MW09-6S 18-Oct-11 K1J0685-01	MW09-6S 24-May-12 2051369-03 Normal	MW09-6S 22-Aug-12 2081484-01 Normal	MW09-6S 20-Nov-12 2111131-01 Normal	MW09-6S 21-May-13 3051354-01 Normal	MW09-6S 20-Aug-13 3081378-01 Normal	MW09-6S 12-Nov-13 3110772-01 Normal	MW09-6S 02-Jun-14 4060249-06 Normal	MW09-6S 18-Aug-14 4081094-06 Normal	MW09-6S 04-Nov-14 4110161-06 Normal	MW09-6S 25-May-15 5051773-06 Normal	MW09-6S 25-Aug-15 5081710-04 Normal	MW09-6S 09-Nov-15 5110693-03 Normal	MW09-6S 03-May-16 6050336-01 Normal	MW09-6S 22-Aug-16 6081698-06 Duplicate	MW09-6S 22-Aug-16 6081698-07 Duplicate	MW09-6S 22-Aug-16 6081698-01 Normal	MW09-6S 14-Nov-16 6111141-03 Normal
Carbon tetrachloride	mg/L																		
Chloroform	mg/L																		
Dibromochloromethane	mg/L																		
Dibromomethane	mg/L																		
Dichloromethane	mg/L																		
Total Trihalomethanes (calculated)	mg/L																		
Trichlorofluoromethane	mg/L																		
Metals																			
Aluminum (dissolved)	mg/L	<0.005	0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	0.024	0.859	<0.005	<0.005	<0.005	<0.005	0.007
Aluminum (total)	mg/L																		
Antimony (dissolved)	mg/L	<0.0020	0.0002	0.0009	0.0009	0.0009	0.0011	0.0010	0.0003	0.0005	0.0003	0.0005	0.0005	0.0004	0.0006	<0.0001	<0.0001	<0.0001	0.0002
Antimony (total)	mg/L																		
Arsenic (dissolved)	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0010	0.0034	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (total)	mg/L																		
Barium (dissolved)	mg/L	0.051	0.062	0.066	0.067	0.067	0.065	0.061	0.059	0.054	0.058	0.062	0.062	0.071	0.055	0.060	0.059	0.058	0.057
Barium (total)	mg/L																		
Beryllium (dissolved)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0006	<0.0001	<0.0001	<0.0001	<0.0001	0.0030
Beryllium (total)	mg/L																		
Bismuth (dissolved)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth (total)	mg/L																		
Boron (dissolved)	mg/L	1.26	1.23	1.29	1.43	1.47	1.53	1.64	1.67	1.60	1.61	2.04	1.90	1.77	2.12	2.16	2.00	2.08	1.76
Boron (total)	mg/L																		
Cadmium (dissolved)	mg/L	0.00002	<0.00001	<0.00001	0.00002	0.00002	0.00003	0.00001	<0.00001	<0.00001	0.00001	0.00002	<0.00001	0.00003	<0.00001	0.00002	0.00001	0.00002	0.00003
Cadmium (total)	mg/L																		
Calcium (dissolved)	mg/L	177	180	182	193	218	235	231	218	217	209	199	197	208	202	188	181	179	168
Calcium (total)	mg/L																		
Chromium (dissolved)	mg/L	<0.0005	<0.0005	0.0016	0.0006	0.0009	<0.0005	0.0066	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	0.0057	0.0007	0.0007	0.0008	<0.0005
Chromium (total)	mg/L																		
Cobalt (dissolved)	mg/L	0.00093	0.00136	0.00114	0.00108	0.00148	0.00128	0.00127	0.00100	0.00118	0.00133	0.00141	0.00149	0.00204	0.00198	0.00164	0.00161	0.00164	0.00183
Cobalt (total)	mg/L																		
Copper (dissolved)	mg/L	0.0170	0.0009	0.0018	0.0016	0.0014	0.0021	0.0013	0.0169	0.0017	0.0018	0.0028	0.0420	0.200	0.0065	0.0034	0.0033	0.0051	0.217
Copper (total)	mg/L																		
Iron (dissolved)	mg/L	<0.01	<0.01	0.02	0.01	0.028	<0.010	0.105	<0.010	0.012	0.011	0.011	0.062	1.21	0.609	0.014	0.015	0.021	0.020
Iron (total)	mg/L																		
Lead (dissolved)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0006	<0.0001	<0.0001	<0.0001	0.0014	0.0039	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Lead (total)	mg/L																		
Lithium (dissolved)	mg/L	0.0335	0.0361	0.0382	0.0395	0.0450	0.0479	0.0486	0.0520	0.0497	0.0501	0.0483	0.0513	0.0462	0.0519	0.0409	0.0371	0.0396	0.0438
Lithium (total)	mg/L																		
Magnesium (dissolved)	mg/L	246	308	308	321	349	378	347	351	335	329	332	339	322	327	353	347	331	309
Magnesium (total)	mg/L																		
Manganese (dissolved)	mg/L	0.0932	0.0720	0.0683	0.0882	0.112	0.122	0.119	0.0908	0.121	0.132	0.0747	0.0870	0.157	0.0791	0.0824	0.0819	0.0793	0.0731
Manganese (total)	mg/L																		
Mercury (dissolved)	mg/L	0.00005	<0.00002	0.00008	0.00004	0.00002	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Mercury (total)	mg/L																		
Molybdenum (dissolved)	mg/L	0.0036	0.0003	0.0018	0.0005	0.0006	0.0003	0.0007	0.0003	0.0003	0.0003	0.0004	0.0004	0.0037	0.0003	0.0003	0.0003	0.0003	0.0012
Molybdenum (total)	mg/L																		
Nickel (dissolved)	mg/L	0.0067	0.0073	0.0080	0.0080	0.0155	0.0097	0.0176	0.0078	0.0097	0.0103	0.0093	0.0109	0.0119	0.0139	0.0122	0.0119	0.0114	0.0116
Nickel (total)	mg/L																		
Selenium (dissolved)	mg/L	<0.0005	0.0007	<0.0005	<0.0005	<0.0005	0.0008	<0.0005	<0.0005	0.0006	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Selenium (total)	mg/L																		
Silicon (dissolved, as Si)	mg/L	10.2	12.2	11.4	11.9	11.9	12.5	11.1	12.0	12.3	13.7	12.7	12.7	12.9	13.3	12.1	12.0	11.2	12.1
Silicon (total, as Si)	mg/L																		
Silver (dissolved)	mg/L	0.00009	<0.00005	<0.00005	0.00011	0.00010	<0.00005	0.00008	<0.00005	<0.00005	<0.00005	0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005

Golden Refuse Disposal Site
Water Quality Results

Analyte	Unit	MW09-6S 18-Oct-11 K1J0685-01	MW09-6S 24-May-12 2051369-03 Normal	MW09-6S 22-Aug-12 2081484-01 Normal	MW09-6S 20-Nov-12 2111131-01 Normal	MW09-6S 21-May-13 3051354-01 Normal	MW09-6S 20-Aug-13 3081378-01 Normal	MW09-6S 12-Nov-13 3110772-01 Normal	MW09-6S 02-Jun-14 4060249-06 Normal	MW09-6S 18-Aug-14 4081094-06 Normal	MW09-6S 04-Nov-14 4110161-06 Normal	MW09-6S 25-May-15 5051773-06 Normal	MW09-6S 25-Aug-15 5081710-04 Normal	MW09-6S 09-Nov-15 5110693-03 Normal	MW09-6S 03-May-16 6050336-01 Normal	MW09-6S 22-Aug-16 6081698-06 Duplicate	MW09-6S 22-Aug-16 6081698-07 Duplicate	MW09-6S 22-Aug-16 6081698-01 Normal	MW09-6S 14-Nov-16 6111141-03 Normal
Silver (total)	mg/L																			
Sodium (dissolved)	mg/L	290	346	362	375	409	444	407	372	385	428	385	394	375	359	386	379	366	347	
Sodium (total)	mg/L																			
Strontium (dissolved)	mg/L	1.74	1.91	2.00	2.11	2.18	2.28	2.10	2.15	2.06	2.04	1.92	2.05	1.90	1.95	1.95	1.93	1.84	1.76	
Strontium (total)	mg/L																			
Sulphur (dissolved)	mg/L		266	298	339	359	405	366	337	340	398	343	362	342	281	348	350	336	312	
Sulphur (total)	mg/L																			
Tellurium (dissolved)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Tellurium (total)	mg/L																			
Thallium (dissolved)	mg/L	0.00006	0.00005	0.00005	0.00022	0.00005	0.00009	0.00007	0.00005	0.00007	0.00007	0.00007	0.00006	0.00007	0.00006	0.00007	0.00006	0.00006	0.00006	
Thallium (total)	mg/L																			
Thorium (dissolved)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Thorium (total)	mg/L																			
Tin (dissolved)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	0.0013	<0.0002	0.0003	0.0003	0.0003	0.0003	
Tin (total)	mg/L																			
Titanium (dissolved)	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.038	0.014	<0.005	<0.005	<0.005	<0.005	
Titanium (total)	mg/L																			
Tungsten (dissolved)	mg/L																			
Tungsten (total)	mg/L																			
Uranium (dissolved)	mg/L	0.00607	0.00580	0.00698	0.00686	0.00779	0.00823	0.00765	0.00721	0.00777	0.00802	0.00729	0.00779	0.00804	0.00863	0.00802	0.00765	0.00753	0.00717	
Uranium (total)	mg/L																			
Vanadium (dissolved)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.002	<0.001	<0.001	<0.001	<0.001	
Vanadium (total)	mg/L																			
Zinc (dissolved)	mg/L	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.009	0.005	0.005	0.006	0.027	0.067	0.009	0.030	0.029	0.035	0.199	
Zinc (total)	mg/L																			
Zirconium (dissolved)	mg/L	0.0001	0.0001	0.0003	0.0001	0.0002	0.0002	0.0001	0.0001	0.0004	0.0004	0.0002	0.0001	0.0008	0.0002	0.0002	0.0002	0.0001	0.0001	
Zirconium (total)	mg/L																			
Microbiological																				
E. coli (counts)	CFU/100 mL																			
E. coli (MPN)	MPN/100 mL																			
Fecal coliforms (counts)	CFU/100 mL																			
Fecal coliforms (MPN)	MPN/100 mL																			
Total coliforms (counts)	CFU/100 mL																			
Total coliforms (MPN)	MPN/100 mL																			
Miscellaneous Organic Substances																				
Chloroethane	mg/L																			
1,2-Dibromoethane	mg/L																			
1,2-Dichloropropane	mg/L																			
1,3-Dichloropropene	mg/L																			
Methyl tert-butyl ether (MTBE)	mg/L																			
VHw6-10	mg/L																			
Vinyl chloride	mg/L																			
VPHw	mg/L																			
Monocyclic Aromatic Hydrocarbons (MAHs)																				
Benzene	mg/L																			
Ethylbenzene	mg/L																			
Styrene	mg/L																			
Toluene	mg/L																			
Xylenes	mg/L																			
Nutrients																				

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	MW09-6S 18-Oct-11 K1J0685-01	MW09-6S 24-May-12 2051369-03 Normal	MW09-6S 22-Aug-12 2081484-01 Normal	MW09-6S 20-Nov-12 2111131-01 Normal	MW09-6S 21-May-13 3051354-01 Normal	MW09-6S 20-Aug-13 3081378-01 Normal	MW09-6S 12-Nov-13 3110772-01 Normal	MW09-6S 02-Jun-14 4060249-06 Normal	MW09-6S 18-Aug-14 4081094-06 Normal	MW09-6S 04-Nov-14 4110161-06 Normal	MW09-6S 25-May-15 5051773-06 Normal	MW09-6S 25-Aug-15 5081710-04 Normal	MW09-6S 09-Nov-15 5110693-03 Normal	MW09-6S 03-May-16 6050336-01 Normal	MW09-6S 22-Aug-16 6081698-06 Duplicate	MW09-6S 22-Aug-16 6081698-07 Duplicate	MW09-6S 22-Aug-16 6081698-01 Normal	MW09-6S 14-Nov-16 6111141-03 Normal
Ammonia (total, as N)	mg/L	0.16	0.133	0.274	0.406	0.432	0.462	0.518	0.390	0.588	0.408	0.644	0.614	0.899	1.40	1.12	1.16	1.21	0.940
Nitrate (as N)	mg/L	56.3		54.6	59.1	62.3	54.5	54.7	52.1	41.8	48.9	38.0	34.1	33.3	44.1	37.9	38.1	37.7	40.1
Nitrate + Nitrite (as N)	mg/L																		
Nitrate + Nitrite (as N) (calculated)	mg/L	56.3		54.6	59.1	62.3	54.5	54.7	52.1	41.8	48.9	38.0	34.1	33.3	44.1	37.9	38.1	37.7	40.1
Nitrite (as N)	mg/L	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.016
Total kjeldahl nitrogen	mg/L																		
Orthophosphate (dissolved, as P)	mg/L											<0.01	<0.01						
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02
Phosphorus (total, by ICPMS/ICPOES)	mg/L																		
Phosphorus (total, APHA 4500-P)	mg/L																		
Potassium (dissolved)	mg/L	148	170	161	178	202	228	210	222	232	246	215	217	199	209	224	223	213	211
Potassium (total)	mg/L																		

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	MW09-6S 05-Apr-17 7040434-03 Normal	MW09-6S 29-Aug-17 7090074-01 Normal	MW09-6S 20-Nov-17 7111886-01 Normal	MW10-08 16-Nov-10 K0K0729-02	MW10-08 09-May-11 K1E0403-01	MW10-08 09-May-11 K1E0403-04	MW10-08 10-Aug-11 K1H0536-01	MW10-08 18-Oct-11 K1J0685-02	MW10-08 24-May-12 2051369-04 Normal	MW10-08 22-Aug-12 2081484-02 Normal	MW10-08 22-Aug-12 2081484-05 Duplicate	MW10-08 20-Nov-12 2111131-02 Normal	MW10-08 21-May-13 3051354-02 Normal	MW10-08 21-May-13 3051354-06 Duplicate	MW10-08 20-Aug-13 3081378-05 Normal	MW10-08 12-Nov-13 3110772-05 Normal	MW10-08 02-Jun-14 4060249-05 Normal	MW10-08 18-Aug-14 4081094-05 Normal
Field Results																			
Conductivity	µS/cm	4150	4120	3630	2100	2800		2700	3100	3200	3500	3500	340	2200	2200	3300	2700	2740	2770
Depth to Water	m		32.56	32.68	14.14	13.903		13.945	13.780	13.590	13.85	13.85	14.109	14.252	14.252	14.381	16.281	15.19	13.84
Dissolved oxygen	mg/L		1.17	0.60														7.43	7.85
Dissolved oxygen (percent)	%		11.6	5.7														67.1	71.7
Field measured depth to bottom	m		36.11																
Flow rate - container	L/s		0.033																
Ground Elevation	m	920	920	920	921	921	921	921	921	921	921	921	921	921	921	921	921	921	921
Oxidation reduction potential	mV	217	158		-138	2800		83	143	124	52	52	122	254	254	121	47	87	132
pH		7.3	7.0	7.0	8.44	7.85		7.51	7.33	7.43	7.54	7.54	7.6	7.40	7.40	7.37	7.23	3.1	7.3
Temperature	°C	11.8	12.6	12.0	5.9	8.7		8.1	6.9	7.9	8.4	8.4	7.1	8.9	8.9	8.6	7.5	8.1	9.5
Lab Results																			
Chlorinated Hydrocarbons																			
1,2-Dichlorobenzene	mg/L	<0.0005																	
1,3-Dichlorobenzene	mg/L	<0.0010																	
1,4-Dichlorobenzene	mg/L	<0.0010																	
1,1-Dichloroethane	mg/L	<0.0010																	
1,2-Dichloroethane	mg/L	<0.0010																	
1,1-Dichloroethylene	mg/L	<0.0010																	
cis-1,2-Dichloroethylene	mg/L	<0.0010																	
trans-1,2-Dichloroethylene	mg/L	<0.0010																	
Monochlorobenzene	mg/L	<0.0010																	
1,1,2,2-Tetrachloroethane	mg/L	<0.0005																	
Tetrachloroethylene	mg/L	<0.0010																	
1,1,1-Trichloroethane	mg/L	<0.0010																	
1,1,2-Trichloroethane	mg/L	<0.0010																	
Trichloroethylene	mg/L	<0.0010																	
General																			
Alkalinity (bicarbonate, as CaCO3)	mg/L	902	878	929															
Alkalinity (carbonate, as CaCO3)	mg/L	<1.0	<1.0	<1.0															
Alkalinity (hydroxide, as CaCO3)	mg/L	<1.0	<1.0	<1.0															
Alkalinity (phenolphthalein, as CaCO3)	mg/L	<1.0	<1.0	<1.0															
Alkalinity (total, as CaCO3)	mg/L	902	878	929	425	459	455	462	446	515	768	676	731	619	637	516	598	514	476
Bicarbonate Alkalinity (as HCO3)	mg/L	1100	1070	1130															
Carbonate Alkalinity (as CO3)	mg/L	<0.600	<0.600	<0.600															
Hydroxide Alkalinity (as OH)	mg/L	<0.340	<0.340	<0.340															
Bromide	mg/L	0.88	2.16	2.84															
Chemical Oxygen Demand	mg/L																		
Chloride	mg/L	470	480	417	523	663	647	844	873	834	888	888	988	762	679	820	815	672	672
Conductivity	µS/cm	4350	4170	4190	2250	2850	2870	3150	3060	3340	3410	3430	3500	3070	3110	3300	3380	2940	3180
Fluoride	mg/L	0.14	<0.10	0.51						0.12	0.13	0.19	0.12	0.23	0.24	0.24	0.25	0.27	0.13
Hardness, Total (dissolved as CaCO3)	mg/L	1650	1680	1520	582	878	863	850	790	826	798	803	847	839	839	921	958	800	833
Hardness, Total (total as CaCO3)	mg/L																		
pH		7.42	7.60	7.51	7.97	7.84	7.95	7.76	7.78	7.85	7.74	7.75	6.95	7.78	7.78	7.86	7.86	7.94	7.74
Sulphate	mg/L	799	757	663	72.9	44.3	43.5	44.4	55.2	36.5	37.4	37.2	57.6	53.2	53.3	45.1	56.2	38.1	44.7
Total organic carbon	mg/L																		
Total suspended solids	mg/L	5	66.0	437	117	2960	2800	7470	116	2870	2600	2200	1640	1020	1220	814	1230	300	284
Turbidity	NTU	1.03	46.9	387	87	641	535	>4000	71.1	>4000	2350	2340	1910	620	800	664	1220	292	186
Halogenated Methanes																			
Bromodichloromethane	mg/L	<0.0010																	
Bromoform	mg/L	<0.0010																	

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	MW09-6S 05-Apr-17 7040434-03 Normal	MW09-6S 29-Aug-17 7090074-01 Normal	MW09-6S 20-Nov-17 7111886-01 Normal	MW10-08 16-Nov-10 K0K0729-02	MW10-08 09-May-11 K1E0403-01	MW10-08 09-May-11 K1E0403-04	MW10-08 10-Aug-11 K1H0536-01	MW10-08 18-Oct-11 K1J0685-02	MW10-08 24-May-12 2051369-04 Normal	MW10-08 22-Aug-12 2081484-02 Normal	MW10-08 22-Aug-12 2081484-05 Duplicate	MW10-08 20-Nov-12 2111131-02 Normal	MW10-08 21-May-13 3051354-02 Normal	MW10-08 21-May-13 3051354-06 Duplicate	MW10-08 20-Aug-13 3081378-05 Normal	MW10-08 12-Nov-13 3110772-05 Normal	MW10-08 02-Jun-14 4060249-05 Normal	MW10-08 18-Aug-14 4081094-05 Normal
Carbon tetrachloride	mg/L	<0.0005																	
Chloroform	mg/L	<0.0010																	
Dibromochloromethane	mg/L	<0.0010																	
Dibromomethane	mg/L	<0.0010																	
Dichloromethane	mg/L	<0.0030																	
Total Trihalomethanes (calculated)	mg/L	<0.0020																	
Trichlorofluoromethane	mg/L	<0.0010																	
Metals																			
Aluminum (dissolved)	mg/L	0.006	0.0067	<0.0050	0.007	<0.005	0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006
Aluminum (total)	mg/L																		
Antimony (dissolved)	mg/L	0.0001	<0.00020	<0.00020	0.0008	0.0015	0.0006	0.0010	<0.0020	0.0003	0.0016	0.0015	0.0009	0.0007	0.0004	0.0004	0.0007	0.0003	0.0003
Antimony (total)	mg/L																		
Arsenic (dissolved)	mg/L	0.0007	0.00055	<0.00050	0.0107	0.0149	0.0147	0.0061	0.0031	0.0028	0.0039	0.0040	0.0024	0.0024	0.0024	0.0029	0.0018	0.0024	0.0042
Arsenic (total)	mg/L																		
Barium (dissolved)	mg/L	0.057	0.0510	0.0500	0.125	0.257	0.245	0.246	0.195	0.255	0.271	0.272	0.250	0.227	0.223	0.239	0.257	0.192	0.235
Barium (total)	mg/L																		
Beryllium (dissolved)	mg/L	<0.0001	<0.00010	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Beryllium (total)	mg/L																		
Bismuth (dissolved)	mg/L	<0.0001	<0.00010	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth (total)	mg/L																		
Boron (dissolved)	mg/L	2.03	1.86	1.57	0.093	0.034	0.034	0.028	0.027	0.031	0.017	0.020	0.024	0.025	0.028	0.051	0.041	0.031	0.035
Boron (total)	mg/L																		
Cadmium (dissolved)	mg/L	<0.00001	<0.000010	<0.000010	0.00009	0.00002	<0.00001	<0.00001	0.00008	<0.00001	<0.00001	<0.00001	0.00003	0.00004	0.00002	0.00001	0.00002	0.00002	0.00003
Cadmium (total)	mg/L																		
Calcium (dissolved)	mg/L	163	180	167	73.8	87.6	90.6	103	100	102	107	105	110	107	107	120	128	103	116
Calcium (total)	mg/L																		
Chromium (dissolved)	mg/L	0.0006	0.00063	<0.00050	0.0025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Chromium (total)	mg/L																		
Cobalt (dissolved)	mg/L	0.00164	0.00161	0.00164	0.00537	0.0198	0.0186	0.00674	0.00078	0.00219	0.00342	0.00355	0.00264	0.00126	0.00122	0.00127	0.00151	0.00111	0.00024
Cobalt (total)	mg/L																		
Copper (dissolved)	mg/L	0.0028	0.00681	0.00211	0.0031	<0.0002	<0.0002	<0.0002	0.0054	<0.0002	0.0010	0.0010	0.0010	0.0014	0.0013	<0.0002	0.0012	0.0011	0.0040
Copper (total)	mg/L																		
Iron (dissolved)	mg/L	<0.010	0.013	<0.010	0.347	3.01	2.83	1.87	0.02	0.12	0.15	0.13	0.03	0.011	0.014	0.038	0.012	0.111	0.015
Iron (total)	mg/L																		
Lead (dissolved)	mg/L	<0.0001	<0.00020	<0.00020	0.0002	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0007	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Lead (total)	mg/L																		
Lithium (dissolved)	mg/L	0.0484	0.0452	0.0420	0.0200	0.0243	0.0248	0.0224	0.0193	0.0182	0.0190	0.0187	0.0190	0.0203	0.0204	0.0220	0.0233	0.0223	0.0219
Lithium (total)	mg/L																		
Magnesium (dissolved)	mg/L	302	298	267	96.5	160	155	144	130	139	129	131	139	139	139	151	155	132	132
Magnesium (total)	mg/L																		
Manganese (dissolved)	mg/L	0.0597	0.0887	0.0697	0.219	0.492	0.473	0.349	0.0350	0.0785	0.0546	0.0577	0.172	0.0896	0.0897	0.0336	0.0871	0.0380	0.0049
Manganese (total)	mg/L																		
Mercury (dissolved)	mg/L	<0.00002	<0.000010	0.000041	<0.00005	<0.00002	0.00002	0.00002	0.00008	0.00003	0.00006	0.00005	0.00003	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00002
Mercury (total)	mg/L																		
Molybdenum (dissolved)	mg/L	0.0003	0.00031	0.00032	0.0149	0.0046	0.0042	0.0019	0.0046	0.0009	0.0024	0.0023	0.0011	0.0007	0.0007	0.0004	0.0007	0.0006	0.0004
Molybdenum (total)	mg/L																		
Nickel (dissolved)	mg/L	0.0110	0.0113	0.0116	0.0175	0.0277	0.0259	0.0093	0.0099	0.0060	0.0087	0.0088	0.0077	0.0053	0.0051	0.0048	0.0060	0.0045	0.0032
Nickel (total)	mg/L																		
Selenium (dissolved)	mg/L	<0.0005	<0.00050	<0.00050	0.0005	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0006
Selenium (total)	mg/L																		
Silicon (dissolved, as Si)	mg/L	12.6	11.6	11.2	4.21	10.1	9.77	9.0	8.1	10.3	9.6	9.4	9.7	9.4	9.4	9.6	9.1	9.2	9.9
Silicon (total, as Si)	mg/L																		
Silver (dissolved)	mg/L	<0.00005	<0.000050	<0.000050	<0.00005	0.00007	<0.00005	0.00016	0.00006	<0.00005	<0.00005	<0.00005	0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005

Golden Refuse Disposal Site
Water Quality Results

Analyte	Unit	MW09-6S 05-Apr-17 7040434-03 Normal	MW09-6S 29-Aug-17 7090074-01 Normal	MW09-6S 20-Nov-17 7111886-01 Normal	MW10-08 16-Nov-10 K0K0729-02	MW10-08 09-May-11 K1E0403-01	MW10-08 09-May-11 K1E0403-04	MW10-08 10-Aug-11 K1H0536-01	MW10-08 18-Oct-11 K1J0685-02	MW10-08 24-May-12 2051369-04 Normal	MW10-08 22-Aug-12 2081484-02 Normal	MW10-08 22-Aug-12 2081484-05 Duplicate	MW10-08 20-Nov-12 2111131-02 Normal	MW10-08 21-May-13 3051354-02 Normal	MW10-08 21-May-13 3051354-06 Duplicate	MW10-08 20-Aug-13 3081378-05 Normal	MW10-08 12-Nov-13 3110772-05 Normal	MW10-08 02-Jun-14 4060249-05 Normal	MW10-08 18-Aug-14 4081094-05 Normal
Silver (total)	mg/L																		
Sodium (dissolved)	mg/L	343	334	285	178	312	302	341	305	436	450	444	390	359	358	386	392	356	399
Sodium (total)	mg/L																		
Strontium (dissolved)	mg/L	1.74	1.62	1.73	1.03	1.66	1.62	1.60	1.49	1.53	1.60	1.60	1.64	1.52	1.51	1.61	1.64	1.43	1.52
Strontium (total)	mg/L																		
Sulphur (dissolved)	mg/L	284	268	273						19	17	20	23	21	22	20	18	18	17
Sulphur (total)	mg/L																		
Tellurium (dissolved)	mg/L	<0.0002	<0.00050	<0.00050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tellurium (total)	mg/L																		
Thallium (dissolved)	mg/L	0.00006	<0.000020	0.000058	<0.00002	<0.00002	<0.00002	<0.00002	0.00011	<0.00002	<0.00002	<0.00002	0.00003	0.00007	0.00006	<0.00002	0.00008	<0.00002	0.00004
Thallium (total)	mg/L																		
Thorium (dissolved)	mg/L	<0.0001	<0.00010	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thorium (total)	mg/L																		
Tin (dissolved)	mg/L	<0.0002	0.00026	0.00023	0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin (total)	mg/L																		
Titanium (dissolved)	mg/L	<0.005	<0.0050	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Titanium (total)	mg/L																		
Tungsten (dissolved)	mg/L			<0.0010															
Tungsten (total)	mg/L																		
Uranium (dissolved)	mg/L	0.00734	0.00769	0.00796	0.00216	0.00164	0.00166	0.00196	0.00205	0.00173	0.00206	0.00200	0.00206	0.00213	0.00214	0.00218	0.00223	0.00205	0.00210
Uranium (total)	mg/L																		
Vanadium (dissolved)	mg/L	<0.001	<0.0010	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium (total)	mg/L																		
Zinc (dissolved)	mg/L	0.005	0.0340	<0.0040	0.0037	<0.0040	<0.0040	<0.004	0.007	0.008	0.008	0.012	<0.004	0.011	0.011	<0.004	<0.004	<0.004	0.005
Zinc (total)	mg/L																		
Zirconium (dissolved)	mg/L	0.0002	0.00014	0.00012	0.0003	0.0002	0.0002	0.0001	0.0002	0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001
Zirconium (total)	mg/L																		
Microbiological																			
E. coli (counts)	CFU/100 mL																		
E. coli (MPN)	MPN/100 mL																		
Fecal coliforms (counts)	CFU/100 mL																		
Fecal coliforms (MPN)	MPN/100 mL																		
Total coliforms (counts)	CFU/100 mL																		
Total coliforms (MPN)	MPN/100 mL																		
Miscellaneous Organic Substances																			
Chloroethane	mg/L	<0.0020																	
1,2-Dibromoethane	mg/L	<0.0002																	
1,2-Dichloropropane	mg/L	<0.0010																	
1,3-Dichloropropene	mg/L	<0.0010																	
Methyl tert-butyl ether (MTBE)	mg/L	<0.0010																	
VHw6-10	mg/L																		
Vinyl chloride	mg/L	<0.0010																	
VPHw	mg/L																		
Monocyclic Aromatic Hydrocarbons (MAHs)																			
Benzene	mg/L	<0.0005																	
Ethylbenzene	mg/L	<0.0010																	
Styrene	mg/L	<0.0010																	
Toluene	mg/L	0.0066																	
Xylenes	mg/L	<0.0020																	
Nutrients																			

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	MW09-6S 05-Apr-17 7040434-03 Normal	MW09-6S 29-Aug-17 7090074-01 Normal	MW09-6S 20-Nov-17 7111886-01 Normal	MW10-08 16-Nov-10 K0K0729-02	MW10-08 09-May-11 K1E0403-01	MW10-08 09-May-11 K1E0403-04	MW10-08 10-Aug-11 K1H0536-01	MW10-08 18-Oct-11 K1J0685-02	MW10-08 24-May-12 2051369-04 Normal	MW10-08 22-Aug-12 2081484-02 Normal	MW10-08 22-Aug-12 2081484-05 Duplicate	MW10-08 20-Nov-12 2111131-02 Normal	MW10-08 21-May-13 3051354-02 Normal	MW10-08 21-May-13 3051354-06 Duplicate	MW10-08 20-Aug-13 3081378-05 Normal	MW10-08 12-Nov-13 3110772-05 Normal	MW10-08 02-Jun-14 4060249-05 Normal	MW10-08 18-Aug-14 4081094-05 Normal
Ammonia (total, as N)	mg/L	1.19	0.935	1.17	0.05	0.04	<0.02	0.04	0.05	<0.020	0.100	0.091	0.026	0.034	0.060	0.020	1.24	0.118	0.023
Nitrate (as N)	mg/L	42.3	35.3	32.6	0.22	<0.010	<0.010	0.341	0.580	0.590	0.141	0.128	0.339	0.566	0.544	0.929	<0.010	0.206	1.11
Nitrate + Nitrite (as N)	mg/L																		
Nitrate + Nitrite (as N) (calculated)	mg/L	48.0	35.3	32.6	0.22	<0.01	<0.01	0.341	0.580	0.590	0.141	0.128	0.339	0.566	0.544	0.929	<0.014	0.206	1.11
Nitrite (as N)	mg/L	5.70	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total kjeldahl nitrogen	mg/L																		
Orthophosphate (dissolved, as P)	mg/L																		
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L	<0.05	<0.050	<0.050	<0.020	<0.020	<0.020	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
Phosphorus (total, by ICPMS/ICPOES)	mg/L																		
Phosphorus (total, APHA 4500-P)	mg/L																		
Potassium (dissolved)	mg/L	209	200	184	8.58	6.79	6.60	6.33	6.51	7.89	7.23	7.29	6.55	6.53	6.53	6.90	6.64	6.05	6.82
Potassium (total)	mg/L																		

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	MW10-08 04-Nov-14 4110161-05 Normal	MW10-08 25-May-15 5051773-05 Normal	MW15-01 09-Nov-15 5110701-01 Normal	MW15-01 02-May-16 6050110-01	MW15-01 22-Aug-16 6081657-01 Normal	MW15-01 14-Nov-16 6111045-01 Normal	MW15-01 05-Apr-17 7040391-01 Normal	MW15-01 29-Aug-17 7082760-01 Normal	MW15-01 20-Nov-17 7112039-01 Normal	MW95-02 03-Jun-02	MW95-02 26-Aug-02	MW95-02 06-Nov-02	MW95-02 07-Mar-03	MW95-02 12-May-03	MW95-02 03-Nov-03	MW95-02 17-May-04	MW95-02 08-Nov-04	MW95-02 25-Apr-05
Field Results																			
Conductivity	µS/cm	3150	2960	1056	1062	1033	1031	1047	1122	1107									
Depth to Water	m	14.99	15.37	11.04		11.475		10.955	10.425	11.24	9999	9999	9999	9999	21.25	21.25	21.3	21.82	21.28
Dissolved oxygen	mg/L	8.3	7.05	1.42	0.30	0.62	0.35		0.89	1.28									
Dissolved oxygen (percent)	%	71.0	62.5			5.4	3.1		7.9	11.2									
Field measured depth to bottom	m																		
Flow rate - container	L/s																		
Ground Elevation	m	921	921								915	915	915	915	915	915	915	915	915
Oxidation reduction potential	mV	24	23	50	-6	177	162	229	101										
pH		7.4	7.3	6.5	7.1	7.1	7.3	7.6	7.2	7.1									
Temperature	°C	7.5	9.7	9.3	9.2	9.8	8.8	8.7	9.5	8.7					11	11	13	11	12
Lab Results																			
Chlorinated Hydrocarbons																			
1,2-Dichlorobenzene	mg/L				<0.0005			<0.0005											
1,3-Dichlorobenzene	mg/L				<0.0010			<0.0010											
1,4-Dichlorobenzene	mg/L				<0.0010			<0.0010											
1,1-Dichloroethane	mg/L				<0.0010			<0.0010											
1,2-Dichloroethane	mg/L				<0.0010			<0.0010											
1,1-Dichloroethylene	mg/L				<0.0010			<0.0010											
cis-1,2-Dichloroethylene	mg/L				<0.0010			<0.0010											
trans-1,2-Dichloroethylene	mg/L				<0.0010			<0.0010											
Monochlorobenzene	mg/L				<0.0010			<0.0010											
1,1,2,2-Tetrachloroethane	mg/L				<0.0010			<0.0005											
Tetrachloroethylene	mg/L				<0.0010			<0.0010											
1,1,1-Trichloroethane	mg/L				<0.0010			<0.0010											
1,1,2-Trichloroethane	mg/L				<0.0010			<0.0010											
Trichloroethylene	mg/L				<0.0010			<0.0010											
General																			
Alkalinity (bicarbonate, as CaCO3)	mg/L				332	335	335	364	356	126									
Alkalinity (carbonate, as CaCO3)	mg/L				<1	<1	<1	<1.0	<1.0	<1.0									
Alkalinity (hydroxide, as CaCO3)	mg/L				<1	<1	<1	<1.0	<1.0	<1.0									
Alkalinity (phenolphthalein, as CaCO3)	mg/L				<1	<1	<1	<1.0	<1.0	<1.0									
Alkalinity (total, as CaCO3)	mg/L	592	492	350	332	335	335	364	356	126					2800	5600	1720	7040	4100
Bicarbonate Alkalinity (as HCO3)	mg/L				404	408	409	444	434	154									
Carbonate Alkalinity (as CO3)	mg/L				<1	<0.6	<0.6	<0.600	<0.600	<0.600									
Hydroxide Alkalinity (as OH)	mg/L				<1	<0.3	<0.3	<0.340	<0.340	<0.340									
Bromide	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	0.11									
Chemical Oxygen Demand	mg/L														69	202	108	184	136
Chloride	mg/L	700	666	125	117	107	94.5	125	125	116					57.5	63.8	72.5	75	128
Conductivity	µS/cm	3310	2890	1020	993	974	1030	1080	1110	327					1660	1620	1600	1900	2000
Fluoride	mg/L	0.26	0.26	<0.10	<0.10	<0.10	<0.10	0.16	0.14	<0.10									
Hardness, Total (dissolved as CaCO3)	mg/L	826	734	443	408		402	431										920	1020
Hardness, Total (total as CaCO3)	mg/L			532															
pH		7.82	7.81	7.65	7.86										7.1	6.8	6.9	7.1	7.2
Sulphate	mg/L	47.5	39.4	45.8	43.2	45.1	42.3	46.5	46.6	47.3					51	78	71	79	104
Total organic carbon	mg/L			1.0	<0.5	0.7	0.8	1.0	0.83	<0.50									
Total suspended solids	mg/L	1240	214																
Turbidity	NTU	1180	122	37.8	2.5	12.1	7.28	1.60	1.30	2.48					>4000	>4000	>4000	>4000	>4000
Halogenated Methanes																			
Bromodichloromethane	mg/L				<0.0010			<0.0010											
Bromoform	mg/L				<0.0010			<0.0010											

Golden Refuse Disposal Site
Water Quality Results

Analyte	Unit	MW10-08 04-Nov-14 4110161-05 Normal	MW10-08 25-May-15 5051773-05 Normal	MW15-01 09-Nov-15 5110701-01 Normal	MW15-01 02-May-16 6050110-01 Normal	MW15-01 22-Aug-16 6081657-01 Normal	MW15-01 14-Nov-16 6111045-01 Normal	MW15-01 05-Apr-17 7040391-01 Normal	MW15-01 29-Aug-17 7082760-01 Normal	MW15-01 20-Nov-17 7112039-01 Normal	MW95-02 03-Jun-02	MW95-02 26-Aug-02	MW95-02 06-Nov-02	MW95-02 07-Mar-03	MW95-02 12-May-03	MW95-02 03-Nov-03	MW95-02 17-May-04	MW95-02 08-Nov-04	MW95-02 25-Apr-05
Carbon tetrachloride	mg/L				<0.0010			<0.0005											
Chloroform	mg/L				<0.0010			<0.0010											
Dibromochloromethane	mg/L				<0.0010			<0.0010											
Dibromomethane	mg/L				<0.0010			<0.0010											
Dichloromethane	mg/L				<0.0030			<0.0030											
Total Trihalomethanes (calculated)	mg/L				<0.0020			<0.0020											
Trichlorofluoromethane	mg/L				<0.0010			<0.0010											
Metals																			
Aluminum (dissolved)	mg/L	0.010	<0.005	0.008	<0.005		0.007	<0.005							<0.2	<0.2	<0.2		<0.4
Aluminum (total)	mg/L			0.455	0.069		0.122	0.047											
Antimony (dissolved)	mg/L	0.0013	0.0019	<0.0001	0.0004		0.0001	<0.0001							<0.2	<0.2	<0.2		<0.4
Antimony (total)	mg/L			<0.0001	0.0004		0.0001	<0.0001											
Arsenic (dissolved)	mg/L	0.0016	0.0039	<0.0005	<0.0005		<0.0005	<0.0005							<0.2	<0.2	<0.2		<0.4
Arsenic (total)	mg/L			<0.0005	<0.0005		<0.0005	<0.0005											
Barium (dissolved)	mg/L	0.242	0.212	0.154	0.156		0.157	0.165							0.2	0.19	0.19		0.21
Barium (total)	mg/L			0.184	0.165		0.171	0.178											
Beryllium (dissolved)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001											
Beryllium (total)	mg/L			0.0001	<0.0001		0.0002	<0.0001											
Bismuth (dissolved)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001											
Bismuth (total)	mg/L			<0.0001	<0.0001		<0.0001	<0.0001											
Boron (dissolved)	mg/L	0.024	0.020	0.029	0.033		0.031	0.036							0.6	0.58	0.59		0.6
Boron (total)	mg/L			0.028	0.034		0.033	0.040											
Cadmium (dissolved)	mg/L	0.00001	0.00004	<0.00001	<0.00001		0.00001	<0.00001							<0.01	<0.01	<0.01		<0.02
Cadmium (total)	mg/L			<0.00001	<0.00001		<0.00001	<0.00001											
Calcium (dissolved)	mg/L	116	101	97.5	88.1		86.4	92.0							174	177	175		210
Calcium (total)	mg/L			118	89.6		92.2	102											
Chromium (dissolved)	mg/L	<0.0005	0.0007	<0.0005	0.0018		<0.0005	<0.0005							<0.01	<0.01			<0.02
Chromium (total)	mg/L			0.0018	<0.0005		<0.0005	<0.0005											
Cobalt (dissolved)	mg/L	0.00096	0.00012	0.00007	0.00019		0.00006	<0.00005											
Cobalt (total)	mg/L			0.00062	0.00022		0.00016	0.00006											
Copper (dissolved)	mg/L	0.0008	0.0051	0.0019	0.0008		0.0030	<0.0002							<0.01	<0.01			<0.02
Copper (total)	mg/L			0.0281	0.0024		0.0181	0.0004											
Iron (dissolved)	mg/L	0.049	0.015	0.019	0.279		<0.010	<0.010							<0.03	<0.03	<0.03		<0.06
Iron (total)	mg/L			1.07	0.36		0.27	0.06											
Lead (dissolved)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001							<0.05	<0.05	<0.05		<0.1
Lead (total)	mg/L			0.0008	<0.0001		0.0002	<0.0001											
Lithium (dissolved)	mg/L	0.0212	0.0188	0.0049	0.0058		0.0047	0.0054											
Lithium (total)	mg/L			0.0061	0.0059		0.0050	0.0052											
Magnesium (dissolved)	mg/L	130	117	48.5	45.6		45.3	48.7							99.4	103	91.3		120
Magnesium (total)	mg/L			57.5	46.4		47.1	49.0											
Manganese (dissolved)	mg/L	0.0270	0.0031	0.0043	0.0012		0.0013	0.0003							0.009	0.083	0.02		0.04
Manganese (total)	mg/L			0.0238	0.0024		0.0046	0.0013											
Mercury (dissolved)	mg/L	0.00002	<0.00002	<0.00002	<0.00002		<0.00002	<0.00002											
Mercury (total)	mg/L			<0.00002	<0.00002		<0.00002	<0.00002											
Molybdenum (dissolved)	mg/L	0.0007	0.0006	0.0003	0.0003		0.0003	0.0002							<0.03	<0.03	<0.03		<0.06
Molybdenum (total)	mg/L			0.0008	0.0003		0.0004	0.0002											
Nickel (dissolved)	mg/L	0.0039	0.0007	0.0006	0.0017		0.0005	0.0003							<0.05	<0.05	<0.05		<0.1
Nickel (total)	mg/L			0.0003	0.0024		0.0005	0.0004											
Selenium (dissolved)	mg/L	<0.0005	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005							<0.2	<0.2	<0.2		<0.4
Selenium (total)	mg/L			<0.0005	<0.0005		<0.0005	<0.0005											
Silicon (dissolved, as Si)	mg/L	10.4	10.4	4.8	5.3		4.0	4.9											
Silicon (total, as Si)	mg/L			6.3	5.4		5.2	5.0											
Silver (dissolved)	mg/L	<0.00005	<0.00005	<0.00005	<0.00005		<0.00005	<0.00005											

Golden Refuse Disposal Site
Water Quality Results

Analyte	Unit	MW10-08 04-Nov-14 4110161-05 Normal	MW10-08 25-May-15 5051773-05 Normal	MW15-01 09-Nov-15 5110701-01 Normal	MW15-01 02-May-16 6050110-01 Normal	MW15-01 22-Aug-16 6081657-01 Normal	MW15-01 14-Nov-16 6111045-01 Normal	MW15-01 05-Apr-17 7040391-01 Normal	MW15-01 29-Aug-17 7082760-01 Normal	MW15-01 20-Nov-17 7112039-01 Normal	MW95-02 03-Jun-02	MW95-02 26-Aug-02	MW95-02 06-Nov-02	MW95-02 07-Mar-03	MW95-02 12-May-03	MW95-02 03-Nov-03	MW95-02 17-May-04	MW95-02 08-Nov-04	MW95-02 25-Apr-05
Silver (total)	mg/L			0.00005	<0.00005		<0.00005	<0.00005											
Sodium (dissolved)	mg/L	436	365	61.0	64.0		55.4	61.1							68	73.8	74		120
Sodium (total)	mg/L			72.3	58.8		57.5	66.0											
Strontium (dissolved)	mg/L	1.56	1.35	0.542	0.592		0.548	0.561											
Strontium (total)	mg/L			0.634	0.609		0.571	0.597											
Sulphur (dissolved)	mg/L	20	16	17	17		14	14											
Sulphur (total)	mg/L			21	16		14	14											
Tellurium (dissolved)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002		<0.0002	<0.0002											
Tellurium (total)	mg/L			<0.0002	<0.0002		<0.0002	<0.0002											
Thallium (dissolved)	mg/L	<0.00002	0.00002	<0.00002	<0.00002		<0.00002	<0.00002											
Thallium (total)	mg/L			<0.00002	<0.00002		<0.00002	<0.00002											
Thorium (dissolved)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001											
Thorium (total)	mg/L			0.0001	<0.0001		<0.0001	<0.0001											
Tin (dissolved)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002		<0.0002	<0.0002											
Tin (total)	mg/L			0.0004	<0.0002		<0.0002	0.0004											
Titanium (dissolved)	mg/L	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005											
Titanium (total)	mg/L			0.005	<0.005		<0.005	<0.005											
Tungsten (dissolved)	mg/L																		
Tungsten (total)	mg/L																		
Uranium (dissolved)	mg/L	0.00227	0.00193	0.00104	0.00115		0.00102	0.00110											
Uranium (total)	mg/L			0.00120	0.00114		0.00111	0.00108											
Vanadium (dissolved)	mg/L	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001											
Vanadium (total)	mg/L			<0.001	<0.001		<0.001	<0.001											
Zinc (dissolved)	mg/L	0.012	0.008	0.004	<0.004		0.007	<0.004							0.017	0.0197	0.02		0.01
Zinc (total)	mg/L			0.012	<0.004		0.011	<0.004											
Zirconium (dissolved)	mg/L	0.0025	<0.0001	<0.0001	<0.0001		<0.0001	<0.0001											
Zirconium (total)	mg/L			0.0003	<0.0001		<0.0001	<0.0001											
Microbiological																			
E. coli (counts)	CFU/100 mL							<1	<1	<1									
E. coli (MPN)	MPN/100 mL			<3.0	<3.0	<3.0	<3.0												
Fecal coliforms (counts)	CFU/100 mL							<1	<1	<1									
Fecal coliforms (MPN)	MPN/100 mL			<3.0	<3.0	<3.0	<3.0												
Total coliforms (counts)	CFU/100 mL							<1	<1	<1									
Total coliforms (MPN)	MPN/100 mL			<3.0	<3.0	<3.0	<3.0												
Miscellaneous Organic Substances																			
Chloroethane	mg/L				<0.0020			<0.0020											
1,2-Dibromoethane	mg/L				<0.0003			<0.0002											
1,2-Dichloropropane	mg/L				<0.0010			<0.0010											
1,3-Dichloropropene	mg/L				<0.0010			<0.0010											
Methyl tert-butyl ether (MTBE)	mg/L			<0.0010	<0.0010		<0.0010	<0.0010											
VHw6-10	mg/L			<0.100	<0.100		<0.100	<0.100											
Vinyl chloride	mg/L				<0.0020			<0.0010											
VPHw	mg/L			<0.100	<0.100		<0.100	<0.100											
Monocyclic Aromatic Hydrocarbons (MAHs)																			
Benzene	mg/L			<0.0005	<0.0005		<0.0005	<0.0005											
Ethylbenzene	mg/L			<0.0010	<0.0010		<0.0010	<0.0010											
Styrene	mg/L			<0.0010	<0.0010		<0.0010	<0.0010											
Toluene	mg/L			0.0050	<0.0010		0.0076	<0.0010											
Xylenes	mg/L			<0.0020	<0.0020		<0.0020	<0.0020											
Nutrients																			

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	MW10-08 04-Nov-14 4110161-05 Normal	MW10-08 25-May-15 5051773-05 Normal	MW15-01 09-Nov-15 5110701-01 Normal	MW15-01 02-May-16 6050110-01	MW15-01 22-Aug-16 6081657-01 Normal	MW15-01 14-Nov-16 6111045-01 Normal	MW15-01 05-Apr-17 7040391-01 Normal	MW15-01 29-Aug-17 7082760-01 Normal	MW15-01 20-Nov-17 7112039-01 Normal	MW95-02 03-Jun-02	MW95-02 26-Aug-02	MW95-02 06-Nov-02	MW95-02 07-Mar-03	MW95-02 12-May-03	MW95-02 03-Nov-03	MW95-02 17-May-04	MW95-02 08-Nov-04	MW95-02 25-Apr-05
Ammonia (total, as N)	mg/L	0.030	<0.020															0.19	0.04
Nitrate (as N)	mg/L	0.723	0.695	1.19	1.19	1.05	0.803	0.807	1.18	1.15					27.8	16.3	34.5	32.5	65
Nitrate + Nitrite (as N)	mg/L																		
Nitrate + Nitrite (as N) (calculated)	mg/L	0.723	0.695	1.19	1.19	1.05	0.803	0.807	1.18	1.15									
Nitrite (as N)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010					<0.01	0.16	<0.01	0.04	<0.01
Total kjeldahl nitrogen	mg/L														2.92	13	3.7	4.7	5.12
Orthophosphate (dissolved, as P)	mg/L		<0.01			<0.01	<0.01	<0.010	<0.010	<0.010									
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L	<0.02	<0.02	<0.02	<0.02		<0.02	<0.05							<0.3	<0.3	<0.3		<0.6
Phosphorus (total, by ICPMS/ICPOES)	mg/L			<0.02	<0.02		0.04	<0.05											
Phosphorus (total, APHA 4500-P)	mg/L			0.017	0.007														
Potassium (dissolved)	mg/L	6.66	6.34	2.42	2.33		2.35	2.32							54	53	50		50
Potassium (total)	mg/L			2.67	2.23		2.31	2.31											

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	MW95-02 02-Nov-05	MW95-02 17-Apr-06	MW95-02 05-Nov-06	MW95-02 22-May-07 K705752-01	MW95-04 17-May-04	Town Well #4 03-Jun-02	Town Well #4 12-May-03	Town Well #4 17-May-04	Town Well #4 22-May-07 K705752-02	Town Well #4 05-Nov-07 K7K0165-01	Town Well #4 28-Apr-08 K8E0035-01	Town Well #4 14-Oct-08 K8J0452-01	Town Well #4 25-May-09 K9E0816-01	Town Well #4 04-Nov-09 K9K0184-03	Town Well #4 09-Feb-10 K0B0397-03	Town Well #4 15-Jun-10 K0F0788-02	Town Well #4 16-Nov-10 K0K0729-03	Town Well #4 09-May-11 K1E0403-02
Field Results																			
Conductivity	µS/cm													900	890	870	970	890	
Depth to Water	m	9999	21.18	9999	21.27	26.6	8												
Dissolved oxygen	mg/L													2.01	3.7				
Dissolved oxygen (percent)	%																		
Field measured depth to bottom	m																		
Flow rate - container	L/s																		
Ground Elevation	m	915	915	915	915		790	790	790	790	790	790	790	790	790	790	790	790	790
Oxidation reduction potential	mV																49.0	159	
pH														6.85	7.48	7.2	7.41	7.49	
Temperature	°C		10.3		10.0	13		10	12	7.5	5.0			8.4	8.4	7.4	12.2	8.2	
Lab Results																			
Chlorinated Hydrocarbons																			
1,2-Dichlorobenzene	mg/L																		
1,3-Dichlorobenzene	mg/L																		
1,4-Dichlorobenzene	mg/L																		
1,1-Dichloroethane	mg/L																		
1,2-Dichloroethane	mg/L																		
1,1-Dichloroethylene	mg/L																		
cis-1,2-Dichloroethylene	mg/L																		
trans-1,2-Dichloroethylene	mg/L																		
Monochlorobenzene	mg/L																		
1,1,2,2-Tetrachloroethane	mg/L																		
Tetrachloroethylene	mg/L																		
1,1,1-Trichloroethane	mg/L																		
1,1,2-Trichloroethane	mg/L																		
Trichloroethylene	mg/L																		
General																			
Alkalinity (bicarbonate, as CaCO3)	mg/L																		
Alkalinity (carbonate, as CaCO3)	mg/L																		
Alkalinity (hydroxide, as CaCO3)	mg/L																		
Alkalinity (phenolphthalein, as CaCO3)	mg/L																		
Alkalinity (total, as CaCO3)	mg/L		3500		3000	900	287	290	324	310	340	333	345	337	330	325	328	313	331
Bicarbonate Alkalinity (as HCO3)	mg/L																		
Carbonate Alkalinity (as CO3)	mg/L																		
Hydroxide Alkalinity (as OH)	mg/L																		
Bromide	mg/L																		
Chemical Oxygen Demand	mg/L		129		39	89	<5	5	10	<5	<5								
Chloride	mg/L		159		90.5	298	62.5	73.8	65	60.2	76.7	69.4	86.9	74	57.6	91.1	76.7	75.7	79.2
Conductivity	µS/cm		2200		1910	2810	845	866	791	822	881	842	884	899	902	905	874	854	869
Fluoride	mg/L																		
Hardness, Total (dissolved as CaCO3)	mg/L		930		914					369	390	394	377	353	364	382	342	370	388
Hardness, Total (total as CaCO3)	mg/L																		
pH			7		6.8	7	7.1	7.2	7.3	7.1	7.4	7.4	6.9	7.7	7.76	7.81	7.93	7.79	7.85
Sulphate	mg/L		150		254	640	44.5	43	40	37.5	38.0	38.6	40.6	38.8	39.8	42.9	41.2	36.1	37.6
Total organic carbon	mg/L																		
Total suspended solids	mg/L											<1	<1	<1	<1	4	<1	<1	<1
Turbidity	NTU		>4000			680	0.4	2.5	0.6			0.2	0.1	<0.1	0.3	0.2	<0.1	0.1	<0.1
Halogenated Methanes																			
Bromodichloromethane	mg/L																		
Bromoform	mg/L																		

Golden Refuse Disposal Site
Water Quality Results

Analyte	Unit	MW95-02 02-Nov-05	MW95-02 17-Apr-06	MW95-02 05-Nov-06	MW95-02 22-May-07 K705752-01	MW95-04 17-May-04	Town Well #4 03-Jun-02	Town Well #4 12-May-03	Town Well #4 17-May-04	Town Well #4 22-May-07 K705752-02	Town Well #4 05-Nov-07 K7K0165-01	Town Well #4 28-Apr-08 K8E0035-01	Town Well #4 14-Oct-08 K8J0452-01	Town Well #4 25-May-09 K9E0816-01	Town Well #4 04-Nov-09 K9K0184-03	Town Well #4 09-Feb-10 K0B0397-03	Town Well #4 15-Jun-10 K0F0788-02	Town Well #4 16-Nov-10 K0K0729-03	Town Well #4 09-May-11 K1E0403-02
Carbon tetrachloride	mg/L																		
Chloroform	mg/L																		
Dibromochloromethane	mg/L																		
Dibromomethane	mg/L																		
Dichloromethane	mg/L																		
Total Trihalomethanes (calculated)	mg/L																		
Trichlorofluoromethane	mg/L																		
Metals																			
Aluminum (dissolved)	mg/L		<0.02		<0.050	<0.2	<0.2	<0.2	<0.2	<0.050		<0.050	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aluminum (total)	mg/L				<0.10					<0.10									
Antimony (dissolved)	mg/L		<0.02		<0.0050	<0.2	<0.2	<0.2	<0.2	<0.0050		<0.0030	<0.0006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0004
Antimony (total)	mg/L				<0.006					<0.006									
Arsenic (dissolved)	mg/L		<0.02		<0.0050	<0.2	<0.2	<0.2	<0.2	<0.0050		<0.0050	<0.0010	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	<0.0005
Arsenic (total)	mg/L				<0.010					<0.010									
Barium (dissolved)	mg/L		0.15		0.124	0.12	0.2	0.2	0.21	0.191		0.191	0.211	0.227	0.173	0.244	0.216	0.217	0.189
Barium (total)	mg/L				0.114					0.190									
Beryllium (dissolved)	mg/L				<0.0010					<0.0010		<0.0020	<0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Beryllium (total)	mg/L				<0.005					<0.005									
Bismuth (dissolved)	mg/L				<0.0010					<0.0010		<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth (total)	mg/L				<0.001					<0.001									
Boron (dissolved)	mg/L		0.6		0.632	0.65	<0.1	<0.1	<0.1	<0.020		<0.020	0.013	0.015	0.02	0.02	0.015	0.042	0.016
Boron (total)	mg/L				0.608					<0.020									
Cadmium (dissolved)	mg/L		<0.01		<0.00010	<0.01	<0.01	<0.01	<0.01	<0.00010		<0.00010	<0.00002	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00005
Cadmium (total)	mg/L				<0.00010					<0.00010									
Calcium (dissolved)	mg/L		210		215	165	90	104	88	84.6	88.4	91.2	87	83.8	80	87.4	79.1	81.3	90.0
Calcium (total)	mg/L				206					85.1									
Chromium (dissolved)	mg/L		<0.01		0.0054	<0.01	<0.01	<0.01	<0.01	<0.0050		0.006	0.006	0.0033	0.0028	0.0116	0.0022	0.0007	<0.0005
Chromium (total)	mg/L				<0.010					<0.010									
Cobalt (dissolved)	mg/L				0.0037					<0.0010		<0.0005	<0.0001	0.00009	0.00006	0.00007	0.00010	0.00013	<0.00005
Cobalt (total)	mg/L				0.0034					<0.0010									
Copper (dissolved)	mg/L		<0.01		0.0057	<0.01	<0.01	<0.01	<0.01	<0.0050		<0.0030	0.0046	0.0038	0.0016	0.0045	0.0025	0.0025	0.0008
Copper (total)	mg/L				<0.010					<0.010									
Iron (dissolved)	mg/L		<0.06		0.655	<0.03	<0.03	<0.03	<0.03	0.267		0.386	0.079	0.082	0.07	0.063	0.147	0.166	<0.010
Iron (total)	mg/L				0.70					<0.30									
Lead (dissolved)	mg/L		<0.05		<0.0020	<0.05	<0.01	<0.05	<0.05	<0.0020		<0.0010	0.0002	0.0001	<0.0001	0.0002	0.0002	0.0002	0.0001
Lead (total)	mg/L				<0.0020					<0.0020									
Lithium (dissolved)	mg/L				0.0185					0.0018		0.0020	0.0015	0.0021	0.0013	0.0017	0.0021	0.0040	0.0020
Lithium (total)	mg/L				0.0179					<0.0050									
Magnesium (dissolved)	mg/L		97		103	233	37	43.7	38.1	38.4	41.1	40.2	38.9	34.9	39.8	39.7	35.0	40.5	39.7
Magnesium (total)	mg/L				97.2					37.9									
Manganese (dissolved)	mg/L		0.007		0.107	0.009	<0.005	<0.005	<0.005	<0.0100		<0.0050	<0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006
Manganese (total)	mg/L				0.107					<0.010									
Mercury (dissolved)	mg/L				<0.00050					<0.00050		<0.00030	<0.00006	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00002
Mercury (total)	mg/L				<0.00050					<0.00050									
Molybdenum (dissolved)	mg/L		<0.03		<0.0020	<0.03	<0.03	<0.03	<0.03	<0.0020		<0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002
Molybdenum (total)	mg/L				<0.0050					<0.0050									
Nickel (dissolved)	mg/L		<0.05		0.037	<0.05	<0.05	<0.05	<0.05	<0.010		<0.005	0.001	0.0014	0.001	0.0012	0.0016	0.0037	0.0002
Nickel (total)	mg/L				<0.020					<0.020									
Selenium (dissolved)	mg/L		<0.2		<0.0100	<0.2	<0.2	<0.2	<0.2	<0.0100		<0.0050	<0.0010	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005
Selenium (total)	mg/L				<0.010					<0.010									
Silicon (dissolved, as Si)	mg/L				9.58					3.88		5.01	5.35	4.1	3.53	7.83	4.00	2.33	4.89
Silicon (total, as Si)	mg/L				7.5					2.6									
Silver (dissolved)	mg/L				<0.0004					<0.0004		<0.00040	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	MW95-02 02-Nov-05	MW95-02 17-Apr-06	MW95-02 05-Nov-06	MW95-02 22-May-07 K705752-01	MW95-04 17-May-04	Town Well #4 03-Jun-02	Town Well #4 12-May-03	Town Well #4 17-May-04	Town Well #4 22-May-07 K705752-02	Town Well #4 05-Nov-07 K7K0165-01	Town Well #4 28-Apr-08 K8E0035-01	Town Well #4 14-Oct-08 K8J0452-01	Town Well #4 25-May-09 K9E0816-01	Town Well #4 04-Nov-09 K9K0184-03	Town Well #4 09-Feb-10 K0B0397-03	Town Well #4 15-Jun-10 K0F0788-02	Town Well #4 16-Nov-10 K0K0729-03	Town Well #4 09-May-11 K1E0403-02
Silver (total)	mg/L				<0.00050					<0.00050									
Sodium (dissolved)	mg/L		130		107	234	34	37	37	36.8		43.1	42.1	36.7	44.4	45.6	37.8	37.8	44.0
Sodium (total)	mg/L				98.0					34.8									
Strontium (dissolved)	mg/L				1.12					0.414		0.434	0.442	0.481	0.409	0.409	0.451	0.628	0.423
Strontium (total)	mg/L				1.10					0.405									
Sulphur (dissolved)	mg/L																		
Sulphur (total)	mg/L																		
Tellurium (dissolved)	mg/L				<0.0050					<0.0050		<0.0030	<0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tellurium (total)	mg/L				<0.005					<0.005									
Thallium (dissolved)	mg/L				<0.0010					<0.0010		<0.0005	<0.0001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Thallium (total)	mg/L				<0.0010					<0.0010									
Thorium (dissolved)	mg/L				<0.0050					<0.0050		<0.0030	<0.0006		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thorium (total)	mg/L				<0.005					<0.005									
Tin (dissolved)	mg/L				<0.0020					<0.0020		<0.0020	<0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin (total)	mg/L				<0.001					<0.001									
Titanium (dissolved)	mg/L				<0.0200					<0.0200		<0.100	<0.020	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Titanium (total)	mg/L				<0.050					<0.050									
Tungsten (dissolved)	mg/L																		
Tungsten (total)	mg/L																		
Uranium (dissolved)	mg/L				0.0025					0.0011		0.0012	0.0014	0.00124	0.00114	0.00102	0.00115	0.00127	0.00113
Uranium (total)	mg/L				0.0028					0.0012									
Vanadium (dissolved)	mg/L				<0.0050					<0.0050		<0.010	<0.002	<0.0010	<0.0010	0.0046	0.0018	<0.0010	<0.001
Vanadium (total)	mg/L				<0.010					<0.010									
Zinc (dissolved)	mg/L		0.028		<0.040	0.02	0.01	0.021	0.039	<0.040		<0.030	0.008	0.0088	0.0021	0.0051	0.0058	0.0032	<0.0040
Zinc (total)	mg/L				<0.050					<0.050									
Zirconium (dissolved)	mg/L				<0.010					<0.010		<0.005	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Zirconium (total)	mg/L				<0.010					<0.010									
Microbiological																			
E. coli (counts)	CFU/100 mL																		
E. coli (MPN)	MPN/100 mL																		
Fecal coliforms (counts)	CFU/100 mL																		
Fecal coliforms (MPN)	MPN/100 mL																		
Total coliforms (counts)	CFU/100 mL																		
Total coliforms (MPN)	MPN/100 mL																		
Miscellaneous Organic Substances																			
Chloroethane	mg/L																		
1,2-Dibromoethane	mg/L																		
1,2-Dichloropropane	mg/L																		
1,3-Dichloropropene	mg/L																		
Methyl tert-butyl ether (MTBE)	mg/L																		
VHw6-10	mg/L																		
Vinyl chloride	mg/L																		
VPHw	mg/L																		
Monocyclic Aromatic Hydrocarbons (MAHs)																			
Benzene	mg/L																		
Ethylbenzene	mg/L																		
Styrene	mg/L																		
Toluene	mg/L																		
Xylenes	mg/L																		
Nutrients																			

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	MW95-02 02-Nov-05	MW95-02 17-Apr-06	MW95-02 05-Nov-06	MW95-02 22-May-07 K705752-01	MW95-04 17-May-04	Town Well #4 03-Jun-02	Town Well #4 12-May-03	Town Well #4 17-May-04	Town Well #4 22-May-07 K705752-02	Town Well #4 05-Nov-07 K7K0165-01	Town Well #4 28-Apr-08 K8E0035-01	Town Well #4 14-Oct-08 K8J0452-01	Town Well #4 25-May-09 K9E0816-01	Town Well #4 04-Nov-09 K9K0184-03	Town Well #4 09-Feb-10 K0B0397-03	Town Well #4 15-Jun-10 K0F0788-02	Town Well #4 16-Nov-10 K0K0729-03	Town Well #4 09-May-11 K1E0403-02
Ammonia (total, as N)	mg/L		0.08		0.31					<0.02	<0.02	0.04	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nitrate (as N)	mg/L		77		12.5	55.5	1.4	1.35	1.63	1.35	1.09	0.982	1.17	1.12	1.21	1.3	1.17	1.14	0.895
Nitrate + Nitrite (as N)	mg/L				14.0					1.35	1.09								
Nitrate + Nitrite (as N) (calculated)	mg/L				13.9					1.35	1.09	0.982	1.17	1.12	1.21	1.3	1.17	1.14	0.895
Nitrite (as N)	mg/L		<0.01		1.44	0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total kjeldahl nitrogen	mg/L		5.1		7.12	0.84	0.05	<0.05	0.08	0.10	0.06								
Orthophosphate (dissolved, as P)	mg/L																		
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L		<0.3		<0.500	<0.3	<0.3	<0.3	<0.3	<0.500		<0.200	<0.040	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Phosphorus (total, by ICPMS/ICPOES)	mg/L				<0.50					<0.50									
Phosphorus (total, APHA 4500-P)	mg/L																		
Potassium (dissolved)	mg/L		57		59.5	52	<2	<2	<2	1.66		2.17	1.82	2.08	1.48	1.93	2.33	1.95	1.74
Potassium (total)	mg/L				56.4					1.53									

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	Town Well #4 10-Aug-11 K1H0536-04	Town Well #4 18-Oct-11 K1J0685-04	Town Well #4 24-May-12 2051369-02 Normal	Town Well #4 22-Aug-12 2081484-04 Normal	Town Well #4 20-Nov-12 2111131-04 Normal	Town Well #4 21-May-13 3051354-04 Normal	Town Well #4 12-Nov-13 3110772-02 Normal	Town Well #4 02-Jun-14 4060249-02 Normal	Town Well #4 18-Aug-14 4081094-01 Normal	Town Well #4 04-Nov-14 4110161-01 Normal	Town Well #4 25-May-15 5051773-02 Normal	Town Well #4 03-May-16 6050336-05 Normal	Town Well #4 22-Aug-16 6081698-04 Normal	Town Well #4 14-Nov-16 6111141-02 Normal	Town Well #4 05-Apr-17 7040434-04 Normal	Town Well #4 20-Nov-17 7111886-03 Normal	Town Well #6 20-Aug-13 3081378-02 Normal	Town Well #6 02-Jun-14 4060249-01 Normal
Field Results																			
Conductivity	µS/cm	690	930	740	860	800	640	710	799	805	756	813	1013	986	932	63	1050	650	577
Depth to Water	m																		
Dissolved oxygen	mg/L								4.5	3.93	4.38	4.85	4.24	4.67					8.14
Dissolved oxygen (percent)	%								38.2	33.8	37.6	43		39.8					68.1
Field measured depth to bottom	m																		
Flow rate - container	L/s																		
Ground Elevation	m	790	790	790	790	790	790	790	790	790	790	790	790	790	790	790	790		
Oxidation reduction potential	mV	62	119	111	221	188	258	74	165	201	47	68	156	240	293	261		246	183
pH		7.35	7.39	7.43	7.59	7.6	7.36	7.20	7.5	7.5	7.2	7.2	7.4	7.3	7.5	7.5	7.2	7.15	7.3
Temperature	°C	9.4	7.6	8.2	8.8	8.1	8.4	8.1	7.9	8.5	8.4	12.9	8.31	8.6	8.3	8	8.2	7.9	7.7
Lab Results																			
Chlorinated Hydrocarbons																			
1,2-Dichlorobenzene	mg/L															<0.0005			
1,3-Dichlorobenzene	mg/L															<0.0010			
1,4-Dichlorobenzene	mg/L															<0.0010			
1,1-Dichloroethane	mg/L															<0.0010			
1,2-Dichloroethane	mg/L															<0.0010			
1,1-Dichloroethylene	mg/L															<0.0010			
cis-1,2-Dichloroethylene	mg/L															<0.0010			
trans-1,2-Dichloroethylene	mg/L															<0.0010			
Monochlorobenzene	mg/L															<0.0010			
1,1,2,2-Tetrachloroethane	mg/L															<0.0005			
Tetrachloroethylene	mg/L															<0.0010			
1,1,1-Trichloroethane	mg/L															<0.0010			
1,1,2-Trichloroethane	mg/L															<0.0010			
Trichloroethylene	mg/L															<0.0010			
General																			
Alkalinity (bicarbonate, as CaCO3)	mg/L												336	338	336	343	361		
Alkalinity (carbonate, as CaCO3)	mg/L												<1	<1	<1	<1.0	<1.0		
Alkalinity (hydroxide, as CaCO3)	mg/L												<1	<1	<1	<1.0	<1.0		
Alkalinity (phenolphthalein, as CaCO3)	mg/L												<1	<1	<1	<1.0	<1.0		
Alkalinity (total, as CaCO3)	mg/L	332	327	304	313	332	326	314	319	320	319	328	336	338	336	343	361	268	276
Bicarbonate Alkalinity (as HCO3)	mg/L												410	412	410	418	441		
Carbonate Alkalinity (as CO3)	mg/L												<1	<0.6	<0.6	<0.600	<0.600		
Hydroxide Alkalinity (as OH)	mg/L												<1	<0.3	<0.3	<0.340	<0.340		
Bromide	mg/L											<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		
Chemical Oxygen Demand	mg/L																		
Chloride	mg/L	72.9	77.2	63.0	67.2	65.6	69.1	68.5	67.0	69.7	70.2	81.2	97.3	88.5	88.6	90.4	105	22.9	23.7
Conductivity	µS/cm	835	873	825	836	838	833	859	857	880	900	911	966	948	966	959	1050	620	621
Fluoride	mg/L			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Hardness, Total (dissolved as CaCO3)	mg/L	360	360	347	357	356	366	383	397	392	378		436	453	386	398		319	324
Hardness, Total (total as CaCO3)	mg/L											393					389		
pH		7.81	7.82	7.87	7.80	6.94	7.86	7.82	7.92	7.65	7.85	7.83	7.53	7.77	7.97	7.85	7.91	7.94	7.87
Sulphate	mg/L	35.8	40.0	37.2	36.6	40.4	36.6	38.8	37.6	39.7	40.7	40.0	40.3	41.5	40.2	42.8	43.8	20.4	23.5
Total organic carbon	mg/L																		
Total suspended solids	mg/L	<1	<1	<1	6	2	<1	2	<1	<1	<1	<2	<2	<2	<2	<2	<2.0	<1	<1
Turbidity	NTU	0.11	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	0.26	0.6	<0.1
Halogenated Methanes																			
Bromodichloromethane	mg/L															<0.0010			
Bromoform	mg/L															<0.0010			

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	Town Well #4 10-Aug-11 K1H0536-04	Town Well #4 18-Oct-11 K1J0685-04	Town Well #4 24-May-12 2051369-02 Normal	Town Well #4 22-Aug-12 2081484-04 Normal	Town Well #4 20-Nov-12 2111131-04 Normal	Town Well #4 21-May-13 3051354-04 Normal	Town Well #4 12-Nov-13 3110772-02 Normal	Town Well #4 02-Jun-14 4060249-02 Normal	Town Well #4 18-Aug-14 4081094-01 Normal	Town Well #4 04-Nov-14 4110161-01 Normal	Town Well #4 25-May-15 5051773-02 Normal	Town Well #4 03-May-16 6050336-05 Normal	Town Well #4 22-Aug-16 6081698-04 Normal	Town Well #4 14-Nov-16 6111141-02 Normal	Town Well #4 05-Apr-17 7040434-04 Normal	Town Well #4 20-Nov-17 7111886-03 Normal	Town Well #6 20-Aug-13 3081378-02 Normal	Town Well #6 02-Jun-14 4060249-01 Normal
Carbon tetrachloride	mg/L															<0.0005			
Chloroform	mg/L															<0.0010			
Dibromochloromethane	mg/L															<0.0010			
Dibromomethane	mg/L															<0.0010			
Dichloromethane	mg/L															<0.0030			
Total Trihalomethanes (calculated)	mg/L															<0.0020			
Trichlorofluoromethane	mg/L															<0.0010			
Metals																			
Aluminum (dissolved)	mg/L	<0.005	<0.005	<0.005	0.014	<0.005	<0.005	<0.005	<0.005	0.021	<0.005			<0.005	<0.005			<0.005	<0.005
Aluminum (total)	mg/L											<0.005	<0.005			<0.005	<0.0050		
Antimony (dissolved)	mg/L	0.0001	<0.0020	<0.0001	0.0007	0.0003	0.0003	0.0007	0.0004	0.0005	0.0002			<0.0001	<0.0001			0.0005	0.0005
Antimony (total)	mg/L											<0.0001	<0.0001			<0.0001	<0.00020		
Arsenic (dissolved)	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			<0.0005	<0.0005			<0.0005	<0.0005
Arsenic (total)	mg/L											<0.0005	<0.0005			<0.0005	<0.00050		
Barium (dissolved)	mg/L	0.195	0.184	0.189	0.193	0.191	0.195	0.200	0.192	0.195	0.210			0.247	0.219			0.133	0.126
Barium (total)	mg/L											0.193	0.227			0.214	0.228		
Beryllium (dissolved)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			<0.0001	<0.0001			<0.0001	<0.0001
Beryllium (total)	mg/L											<0.0001	<0.0001			<0.0001	<0.00010		
Bismuth (dissolved)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			<0.0001	<0.0001			<0.0001	<0.0001
Bismuth (total)	mg/L											<0.0001	<0.0001			<0.0001	<0.00010		
Boron (dissolved)	mg/L	0.018	0.017	0.018	0.012	0.018	0.018	0.032	0.021	0.024	0.014			0.031	0.014			0.050	0.015
Boron (total)	mg/L											0.015	0.021			0.025	0.0140		
Cadmium (dissolved)	mg/L	0.00009	<0.00001	0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	0.00003	0.00002			0.00002	<0.00001			0.00002	<0.00001
Cadmium (total)	mg/L											<0.00001	<0.00001			<0.00001	<0.000010		
Calcium (dissolved)	mg/L	83.8	84.7	74.7	80.7	82.0	82.5	88.6	90.2	92.1	88.7			100	86.1			81.5	82.8
Calcium (total)	mg/L											91.7	99.5			93.7	91.1		
Chromium (dissolved)	mg/L	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			<0.0005	<0.0005			<0.0005	<0.0005
Chromium (total)	mg/L											<0.0005	<0.0005			0.0005	0.00052		
Cobalt (dissolved)	mg/L	0.00018	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00007	0.00006			0.00006	<0.00005			<0.00005	<0.00005
Cobalt (total)	mg/L											<0.00005	<0.00005			<0.00005	<0.00010		
Copper (dissolved)	mg/L	0.0038	0.0016	0.0007	0.0013	0.0010	0.0008	0.0006	0.0009	0.0014	0.0014			0.0016	0.0012			0.0008	0.0013
Copper (total)	mg/L											0.0039	0.0009			0.0015	0.00073		
Iron (dissolved)	mg/L	0.02	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	0.031	<0.010			<0.010	<0.010			<0.010	<0.010
Iron (total)	mg/L											<0.01	<0.01			<0.01	<0.010		
Lead (dissolved)	mg/L	0.0005	0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0001			<0.0001	0.0001			<0.0001	<0.0001
Lead (total)	mg/L											0.0001	0.0004			0.0001	<0.00020		
Lithium (dissolved)	mg/L	0.0017	0.0018	0.0017	0.0016	0.0018	0.0018	0.0018	0.0020	0.0022	0.0020			0.0019	0.0019			0.0013	0.0013
Lithium (total)	mg/L											0.0020	0.0022			0.0020	0.00199		
Magnesium (dissolved)	mg/L	37.3	34.9	39.1	37.7	36.8	38.9	39.3	41.8	39.4	38.0			49.3	41.5			28.1	28.5
Magnesium (total)	mg/L											39.8	45.4			39.6	39.2		
Manganese (dissolved)	mg/L	0.0008	<0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0068	0.0012			0.0003	<0.0002			0.0009	0.0013
Manganese (total)	mg/L											<0.0002	<0.0002			<0.0002	<0.00020		
Mercury (dissolved)	mg/L	<0.00002	<0.00002	<0.00002	0.00005	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002			<0.00002	<0.00002			<0.00002	<0.00002
Mercury (total)	mg/L											<0.00002	<0.00002			<0.00002	<0.000010		
Molybdenum (dissolved)	mg/L	0.0003	0.0012	0.0003	0.0005	0.0003	0.0002	0.0003	0.0003	0.0003	0.0002			0.0002	0.0002			0.0003	0.0004
Molybdenum (total)	mg/L											0.0003	0.0003			0.0002	0.00019		
Nickel (dissolved)	mg/L	0.0011	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	0.0002	<0.0002	0.0015	0.0004			<0.0002	<0.0002			0.0003	<0.0002
Nickel (total)	mg/L											<0.0002	0.0002			<0.0002	<0.00040		
Selenium (dissolved)	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			<0.0005	<0.0005			<0.0005	<0.0005
Selenium (total)	mg/L											<0.0005	<0.0005			<0.0005	<0.00050		
Silicon (dissolved, as Si)	mg/L	4.8	4.4	4.8	4.6	4.9	4.6	4.2	4.5	4.6	4.9			4.5	4.9			4.1	4.0
Silicon (total, as Si)	mg/L											4.8	5.3			4.7	4.4		
Silver (dissolved)	mg/L	0.00007	<0.00005	<0.00005	<0.00005	0.00006	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005			<0.00005	<0.00005			<0.00005	<0.00005

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	Town Well #4 10-Aug-11 K1H0536-04	Town Well #4 18-Oct-11 K1J0685-04	Town Well #4 24-May-12 2051369-02 Normal	Town Well #4 22-Aug-12 2081484-04 Normal	Town Well #4 20-Nov-12 2111131-04 Normal	Town Well #4 21-May-13 3051354-04 Normal	Town Well #4 12-Nov-13 3110772-02 Normal	Town Well #4 02-Jun-14 4060249-02 Normal	Town Well #4 18-Aug-14 4081094-01 Normal	Town Well #4 04-Nov-14 4110161-01 Normal	Town Well #4 25-May-15 5051773-02 Normal	Town Well #4 03-May-16 6050336-05 Normal	Town Well #4 22-Aug-16 6081698-04 Normal	Town Well #4 14-Nov-16 6111141-02 Normal	Town Well #4 05-Apr-17 7040434-04 Normal	Town Well #4 20-Nov-17 7111886-03 Normal	Town Well #6 20-Aug-13 3081378-02 Normal	Town Well #6 02-Jun-14 4060249-01 Normal
Silver (total)	mg/L											<0.00005	<0.00005			<0.00005	<0.000050		
Sodium (dissolved)	mg/L	39.9	38.2	40.8	39.4	38.7	41.7	42.4	42.5	44.5	48.5			58.2	50.0			15.2	13.9
Sodium (total)	mg/L											46.9	56.5			52.7	52.1		
Strontium (dissolved)	mg/L	0.436	0.370	0.441	0.405	0.399	0.432	0.400	0.421	0.457	0.438			0.527	0.462			0.282	0.269
Strontium (total)	mg/L											0.425	0.490			0.446	0.486		
Sulphur (dissolved)	mg/L			16	17	15	13	9	16	12	13			18	15			8	10
Sulphur (total)	mg/L											14	16			12	14.0		
Tellurium (dissolved)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			<0.0002	<0.0002			<0.0002	<0.0002
Tellurium (total)	mg/L											<0.0002	<0.0002			<0.0002	<0.00050		
Thallium (dissolved)	mg/L	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002			<0.00002	<0.00002			<0.00002	<0.00002
Thallium (total)	mg/L											<0.00002	<0.00002			<0.00002	<0.000020		
Thorium (dissolved)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			<0.0001	<0.0001			<0.0001	<0.0001
Thorium (total)	mg/L											<0.0001	<0.0001			<0.0001	<0.00010		
Tin (dissolved)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			<0.0002	<0.0002			<0.0002	<0.0002
Tin (total)	mg/L											<0.0002	<0.0002			<0.0002	<0.00020		
Titanium (dissolved)	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	<0.005			<0.005	<0.005
Titanium (total)	mg/L											<0.005	<0.005			<0.005	<0.0050		
Tungsten (dissolved)	mg/L																		
Tungsten (total)	mg/L																<0.0010		
Uranium (dissolved)	mg/L	0.00107	0.00104	0.00103	0.00109	0.00103	0.00112	0.00105	0.00114	0.00143	0.00123			0.00130	0.00115			0.00105	0.00103
Uranium (total)	mg/L											0.00115	0.00134			0.00124	0.00127		
Vanadium (dissolved)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001	<0.001			<0.001	<0.001
Vanadium (total)	mg/L											<0.001	<0.001			<0.001	<0.0010		
Zinc (dissolved)	mg/L	0.016	<0.004	<0.004	0.006	<0.004	<0.004	<0.004	<0.004	<0.004	0.005			<0.004	<0.004			<0.004	<0.004
Zinc (total)	mg/L											<0.004	<0.004			<0.004	<0.0040		
Zirconium (dissolved)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			<0.0001	<0.0001			<0.0001	<0.0001
Zirconium (total)	mg/L											<0.0001	0.0002			<0.0001	<0.00010		
Microbiological																			
E. coli (counts)	CFU/100 mL																		
E. coli (MPN)	MPN/100 mL																		
Fecal coliforms (counts)	CFU/100 mL																		
Fecal coliforms (MPN)	MPN/100 mL																		
Total coliforms (counts)	CFU/100 mL																		
Total coliforms (MPN)	MPN/100 mL																		
Miscellaneous Organic Substances																			
Chloroethane	mg/L															<0.0020			
1,2-Dibromoethane	mg/L															<0.0002			
1,2-Dichloropropane	mg/L															<0.0010			
1,3-Dichloropropene	mg/L															<0.0010			
Methyl tert-butyl ether (MTBE)	mg/L															<0.0010			
VHw6-10	mg/L																		
Vinyl chloride	mg/L															<0.0010			
VPHw	mg/L																		
Monocyclic Aromatic Hydrocarbons (MAHs)																			
Benzene	mg/L															<0.0005			
Ethylbenzene	mg/L															<0.0010			
Styrene	mg/L															<0.0010			
Toluene	mg/L															<0.0010			
Xylenes	mg/L															<0.0020			
Nutrients																			

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	Town Well #4 10-Aug-11 K1H0536-04	Town Well #4 18-Oct-11 K1J0685-04	Town Well #4 24-May-12 2051369-02 Normal	Town Well #4 22-Aug-12 2081484-04 Normal	Town Well #4 20-Nov-12 2111131-04 Normal	Town Well #4 21-May-13 3051354-04 Normal	Town Well #4 12-Nov-13 3110772-02 Normal	Town Well #4 02-Jun-14 4060249-02 Normal	Town Well #4 18-Aug-14 4081094-01 Normal	Town Well #4 04-Nov-14 4110161-01 Normal	Town Well #4 25-May-15 5051773-02 Normal	Town Well #4 03-May-16 6050336-05 Normal	Town Well #4 22-Aug-16 6081698-04 Normal	Town Well #4 14-Nov-16 6111141-02 Normal	Town Well #4 05-Apr-17 7040434-04 Normal	Town Well #4 20-Nov-17 7111886-03 Normal	Town Well #6 20-Aug-13 3081378-02 Normal	Town Well #6 02-Jun-14 4060249-01 Normal
Ammonia (total, as N)	mg/L	0.03	0.02	<0.020	0.030	0.025	0.024	0.029	<0.020	<0.020	<0.020	0.038	<0.020	0.031	<0.020	0.026	0.024	<0.020	0.024
Nitrate (as N)	mg/L	1.26	1.21	1.19	1.20	0.755	1.36	1.33	1.26	1.55	1.57	1.53	1.72	1.48	1.19	1.39	1.61	0.781	0.839
Nitrate + Nitrite (as N)	mg/L																		
Nitrate + Nitrite (as N) (calculated)	mg/L	1.26	1.21	1.19	1.20	0.755	1.36	1.33	1.26	1.55	1.57	1.53	1.72	1.48	1.19	1.39	1.61	0.781	0.839
Nitrite (as N)	mg/L	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total kjeldahl nitrogen	mg/L																		
Orthophosphate (dissolved, as P)	mg/L											<0.01	0.04	<0.01	<0.01	<0.010	<0.010		
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.11	<0.02			<0.02	<0.02			<0.02	<0.02
Phosphorus (total, by ICPMS/ICPOES)	mg/L											<0.020	<0.02			<0.05	<0.050		
Phosphorus (total, APHA 4500-P)	mg/L																		
Potassium (dissolved)	mg/L	1.75	1.50	2.04	1.62	1.61	1.69	1.67	1.70	1.84	1.90			2.20	1.93			1.00	0.89
Potassium (total)	mg/L											1.86	2.05			1.85	1.89		

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	Town Well #6 18-Aug-14 4081094-02 Normal	Town Well #6 04-Nov-14 4110161-02 Normal	Town Well #6 25-May-15 5051773-01 Normal	Town Well #6 25-Aug-15 5081710-01 Normal	Town Well #6 09-Nov-15 5110693-04 Normal	Town Well #6 03-May-16 6050336-04 Normal	Town Well #6 22-Aug-16 6081698-05 Normal	Town Well #6 14-Nov-16 6111141-01 Normal	Town Well #6 05-Apr-17 7040434-05 Normal	Town Well #6 29-Aug-17 7090074-02 Normal	Town Well #6 20-Nov-17 7111886-02 Normal
Field Results												
Conductivity	µS/cm	577	677	587	401	670	693	695	723	635	680	726
Depth to Water	m											
Dissolved oxygen	mg/L	7.68	7.38	6.40	7.04	6.51	5.61	6.13	5.71		9.27	9.21
Dissolved oxygen (percent)	%	65.3	64.0	57	63.6			52.5	49.8		83.1	78.7
Field measured depth to bottom	m											
Flow rate - container	L/s											
Ground Elevation	m											
Oxidation reduction potential	mV	172	66	211	46	74	122	234	163	265	31	
pH		7.9	7.4	7.4	7.4	6.6	7.3	7.2	7.3	7.3		7.5
Temperature	°C	8.1	8.1	7.8	10.2	8.2	8.2	8.4	8.0	7.9	9.5	7.9
Lab Results												
Chlorinated Hydrocarbons												
1,2-Dichlorobenzene	mg/L									<0.0005		
1,3-Dichlorobenzene	mg/L									<0.0010		
1,4-Dichlorobenzene	mg/L									<0.0010		
1,1-Dichloroethane	mg/L									<0.0010		
1,2-Dichloroethane	mg/L									<0.0010		
1,1-Dichloroethylene	mg/L									<0.0010		
cis-1,2-Dichloroethylene	mg/L									<0.0010		
trans-1,2-Dichloroethylene	mg/L									<0.0010		
Monochlorobenzene	mg/L									<0.0010		
1,1,2,2-Tetrachloroethane	mg/L									<0.0005		
Tetrachloroethylene	mg/L									<0.0010		
1,1,1-Trichloroethane	mg/L									<0.0010		
1,1,2-Trichloroethane	mg/L									<0.0010		
Trichloroethylene	mg/L									<0.0010		
General												
Alkalinity (bicarbonate, as CaCO3)	mg/L						292	296	308	314	288	304
Alkalinity (carbonate, as CaCO3)	mg/L						<1	<1	<1	<1.0	<1.0	<1.0
Alkalinity (hydroxide, as CaCO3)	mg/L						<1	<1	<1	<1.0	<1.0	<1.0
Alkalinity (phenolphthalein, as CaCO3)	mg/L						<1	<1	<1	<1.0	<1.0	<1.0
Alkalinity (total, as CaCO3)	mg/L	277	291	303	288	295	292	296	308	314	288	304
Bicarbonate Alkalinity (as HCO3)	mg/L						356	361	375	383	352	371
Carbonate Alkalinity (as CO3)	mg/L						<1	<0.6	<0.6	<0.600	<0.600	<0.600
Hydroxide Alkalinity (as OH)	mg/L						<1	<0.3	<0.3	<0.340	<0.340	<0.340
Bromide	mg/L			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chemical Oxygen Demand	mg/L											
Chloride	mg/L	26.2	34.5	28.7	24.8	28.6	24.4	29.2	30.5	31.0	34.4	36.2
Conductivity	µS/cm	634	679	672	618	661	658	666	712	692	655	704
Fluoride	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	0.18
Hardness, Total (dissolved as CaCO3)	mg/L	325	322				398	380	333	334	327	
Hardness, Total (total as CaCO3)	mg/L			346	332	328						308
pH		7.70	7.86	7.81	7.79	7.72	7.74	7.76	7.89	7.89	8.03	8.00
Sulphate	mg/L	24.1	24.3	24.3	23.8	24.8	25.2	27.1	24.9	27.6	24.4	23.0
Total organic carbon	mg/L											
Total suspended solids	mg/L	<1	<1	<2	<2	<3	<2	<2	<2	<2	<2.0	8.6
Turbidity	NTU	<0.1	0.1	<0.1	0.2	0.1	<0.1	0.11	0.13	0.16	0.12	0.10
Halogenated Methanes												
Bromodichloromethane	mg/L									<0.0010		
Bromoform	mg/L									<0.0010		

Golden Refuse Disposal Site
Water Quality Results

Analyte	Unit	Town Well #6 18-Aug-14 4081094-02 Normal	Town Well #6 04-Nov-14 4110161-02 Normal	Town Well #6 25-May-15 5051773-01 Normal	Town Well #6 25-Aug-15 5081710-01 Normal	Town Well #6 09-Nov-15 5110693-04 Normal	Town Well #6 03-May-16 6050336-04 Normal	Town Well #6 22-Aug-16 6081698-05 Normal	Town Well #6 14-Nov-16 6111141-01 Normal	Town Well #6 05-Apr-17 7040434-05 Normal	Town Well #6 29-Aug-17 7090074-02 Normal	Town Well #6 20-Nov-17 7111886-02 Normal
Carbon tetrachloride	mg/L									<0.0005		
Chloroform	mg/L									<0.0010		
Dibromochloromethane	mg/L									<0.0010		
Dibromomethane	mg/L									<0.0010		
Dichloromethane	mg/L									<0.0030		
Total Trihalomethanes (calculated)	mg/L									<0.0020		
Trichlorofluoromethane	mg/L									<0.0010		
Metals												
Aluminum (dissolved)	mg/L	0.011	<0.005					<0.005	<0.005		<0.0050	
Aluminum (total)	mg/L			<0.005	<0.005	<0.05	<0.005			<0.005		<0.0050
Antimony (dissolved)	mg/L	0.0003	0.0002					<0.0001	<0.0001		<0.00020	
Antimony (total)	mg/L			0.0001	<0.0001	<0.001	<0.0001			<0.0001		<0.00020
Arsenic (dissolved)	mg/L	<0.0005	<0.0005					<0.0005	<0.0005		<0.00050	
Arsenic (total)	mg/L			<0.0005	<0.0005	<0.005	<0.0005			<0.0005		<0.00050
Barium (dissolved)	mg/L	0.136	0.146					0.169	0.155		0.133	
Barium (total)	mg/L			0.142	0.146	0.14	0.162			0.150		0.146
Beryllium (dissolved)	mg/L	<0.0001	<0.0001					<0.0001	<0.0001		<0.00010	
Beryllium (total)	mg/L			<0.0001	<0.0001	<0.001	<0.0001			<0.0001		<0.00010
Bismuth (dissolved)	mg/L	<0.0001	<0.0001					<0.0001	<0.0001		<0.00010	
Bismuth (total)	mg/L			<0.0001	<0.0001	<0.001	<0.0001			<0.0001		<0.00010
Boron (dissolved)	mg/L	0.012	0.006					0.014	0.007		0.143	
Boron (total)	mg/L			0.006	0.007	<0.04	0.012			0.016		0.0068
Cadmium (dissolved)	mg/L	0.00002	<0.00001					0.00002	<0.00001		<0.000010	
Cadmium (total)	mg/L			<0.00001	<0.00001	<0.0001	<0.00001			<0.00001		<0.000010
Calcium (dissolved)	mg/L	82.7	84.3					96.8	85.7		84.4	
Calcium (total)	mg/L			90.4	87.9	87.0	105			89.6		83.6
Chromium (dissolved)	mg/L	<0.0005	<0.0005					<0.0005	<0.0005		<0.00050	
Chromium (total)	mg/L			<0.0005	<0.0005	<0.005	<0.0005			0.0006		0.00062
Cobalt (dissolved)	mg/L	0.00007	0.00006					0.00007	<0.00005		<0.00010	
Cobalt (total)	mg/L			<0.00005	<0.00005	<0.0005	<0.00005			<0.00005		<0.00010
Copper (dissolved)	mg/L	0.0028	0.0024					0.0014	0.0008		0.00143	
Copper (total)	mg/L			0.0010	0.0016	<0.002	0.0008			0.0013		0.00153
Iron (dissolved)	mg/L	0.033	0.013					0.012	<0.010		0.019	
Iron (total)	mg/L			0.01	0.01	<0.10	<0.01			<0.01		<0.010
Lead (dissolved)	mg/L	0.0002	<0.0001					<0.0001	<0.0001		<0.00020	
Lead (total)	mg/L			0.0001	0.0001	<0.001	0.0001			<0.0001		<0.00020
Lithium (dissolved)	mg/L	0.0014	0.0013					0.0012	0.0012		0.00140	
Lithium (total)	mg/L			0.0014	0.0012	0.001	0.0017			0.0013		0.00115
Magnesium (dissolved)	mg/L	28.7	27.1					33.6	28.8		28.2	
Magnesium (total)	mg/L			29.2	27.1	26.8	33.0			26.8		24.0
Manganese (dissolved)	mg/L	0.0082	0.0014					0.0011	0.0008		0.00294	
Manganese (total)	mg/L			0.0011	0.0010	<0.002	0.0007			0.0007		0.00077
Mercury (dissolved)	mg/L	<0.00002	<0.00002					<0.00002	<0.00002		<0.000010	
Mercury (total)	mg/L			<0.00002		<0.00002	<0.00002			<0.00002		<0.000010
Molybdenum (dissolved)	mg/L	0.0004	0.0004					0.0003	0.0002		0.00030	
Molybdenum (total)	mg/L			0.0005	0.0003	<0.001	0.0003			0.0003		0.00026
Nickel (dissolved)	mg/L	0.0012	0.0004					0.0002	0.0003		<0.00040	
Nickel (total)	mg/L			<0.0002	0.0006	<0.002	0.0002			0.0002		<0.00040
Selenium (dissolved)	mg/L	<0.0005	<0.0005					<0.0005	<0.0005		<0.00050	
Selenium (total)	mg/L			<0.0005	<0.0005	<0.005	<0.0005			<0.0005		<0.00050
Silicon (dissolved, as Si)	mg/L	4.4	4.5					4.2	4.5		4.0	
Silicon (total, as Si)	mg/L			4.7	4.3	<5	5.2			4.3		3.7
Silver (dissolved)	mg/L	<0.00005	<0.00005					<0.00005	<0.00005		<0.000050	

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	Town Well #6 18-Aug-14 4081094-02 Normal	Town Well #6 04-Nov-14 4110161-02 Normal	Town Well #6 25-May-15 5051773-01 Normal	Town Well #6 25-Aug-15 5081710-01 Normal	Town Well #6 09-Nov-15 5110693-04 Normal	Town Well #6 03-May-16 6050336-04 Normal	Town Well #6 22-Aug-16 6081698-05 Normal	Town Well #6 14-Nov-16 6111141-01 Normal	Town Well #6 05-Apr-17 7040434-05 Normal	Town Well #6 29-Aug-17 7090074-02 Normal	Town Well #6 20-Nov-17 7111886-02 Normal
Silver (total)	mg/L			<0.00005	0.00154	<0.0005	<0.00005			<0.00005		<0.000050
Sodium (dissolved)	mg/L	15.4	17.9					17.9	16.7		17.0	
Sodium (total)	mg/L			18.9	15.1	15.9	17.9			17.1		15.7
Strontium (dissolved)	mg/L	0.301	0.290					0.344	0.312		0.258	
Strontium (total)	mg/L			0.296	0.298	0.27	0.325			0.294		0.285
Sulphur (dissolved)	mg/L	8	7					13	9		7.8	
Sulphur (total)	mg/L			9	8	<10	11			6		7.9
Tellurium (dissolved)	mg/L	<0.0002	<0.0002					<0.0002	<0.0002		<0.00050	
Tellurium (total)	mg/L			<0.0002	<0.0002	<0.002	<0.0002			<0.0002		<0.00050
Thallium (dissolved)	mg/L	<0.00002	<0.00002					<0.00002	<0.00002		<0.000020	
Thallium (total)	mg/L			<0.00002	<0.00002	<0.0002	<0.00002			<0.00002		<0.000020
Thorium (dissolved)	mg/L	<0.0001	<0.0001					<0.0001	<0.0001		<0.00010	
Thorium (total)	mg/L			<0.0001	<0.0001	<0.001	<0.0001			<0.0001		<0.00010
Tin (dissolved)	mg/L	<0.0002	<0.0002					<0.0002	<0.0002		<0.00020	
Tin (total)	mg/L			<0.0002	<0.0002	<0.002	<0.0002			<0.0002		<0.00020
Titanium (dissolved)	mg/L	<0.005	<0.005					<0.005	<0.005		<0.0050	
Titanium (total)	mg/L			<0.005	<0.005	<0.05	<0.005			<0.005		<0.0050
Tungsten (dissolved)	mg/L											
Tungsten (total)	mg/L											<0.0010
Uranium (dissolved)	mg/L	0.00114	0.00114					0.00117	0.00106		0.00109	
Uranium (total)	mg/L			0.00112	0.00111	0.0011	0.00133			0.00109		0.00107
Vanadium (dissolved)	mg/L	<0.001	<0.001					<0.001	<0.001		<0.0010	
Vanadium (total)	mg/L			<0.001	<0.001	<0.01	<0.001			<0.001		<0.0010
Zinc (dissolved)	mg/L	0.010	0.005					<0.004	<0.004		0.0100	
Zinc (total)	mg/L			<0.004	0.016	<0.04	<0.004			0.004		<0.0040
Zirconium (dissolved)	mg/L	<0.0001	<0.0001					<0.0001	<0.0001		<0.00010	
Zirconium (total)	mg/L			<0.0001	<0.0001	<0.001	<0.0001			<0.0001		<0.00010
Microbiological												
E. coli (counts)	CFU/100 mL											
E. coli (MPN)	MPN/100 mL											
Fecal coliforms (counts)	CFU/100 mL											
Fecal coliforms (MPN)	MPN/100 mL											
Total coliforms (counts)	CFU/100 mL											
Total coliforms (MPN)	MPN/100 mL											
Miscellaneous Organic Substances												
Chloroethane	mg/L									<0.0020		
1,2-Dibromoethane	mg/L									<0.0002		
1,2-Dichloropropane	mg/L									<0.0010		
1,3-Dichloropropene	mg/L									<0.0010		
Methyl tert-butyl ether (MTBE)	mg/L									<0.0010		
VHw6-10	mg/L											
Vinyl chloride	mg/L									<0.0010		
VPHw	mg/L											
Monocyclic Aromatic Hydrocarbons (MAHs)												
Benzene	mg/L									<0.0005		
Ethylbenzene	mg/L									<0.0010		
Styrene	mg/L									<0.0010		
Toluene	mg/L									<0.0010		
Xylenes	mg/L									<0.0020		
Nutrients												

Golden Refuse Disposal Site

Water Quality Results

Analyte	Unit	Town Well #6 18-Aug-14 4081094-02 Normal	Town Well #6 04-Nov-14 4110161-02 Normal	Town Well #6 25-May-15 5051773-01 Normal	Town Well #6 25-Aug-15 5081710-01 Normal	Town Well #6 09-Nov-15 5110693-04 Normal	Town Well #6 03-May-16 6050336-04 Normal	Town Well #6 22-Aug-16 6081698-05 Normal	Town Well #6 14-Nov-16 6111141-01 Normal	Town Well #6 05-Apr-17 7040434-05 Normal	Town Well #6 29-Aug-17 7090074-02 Normal	Town Well #6 20-Nov-17 7111886-02 Normal
Ammonia (total, as N)	mg/L	<0.020	<0.020	<0.020	<0.020	0.020	<0.020	0.020	0.037	0.030	0.021	0.028
Nitrate (as N)	mg/L	0.993	1.23	0.890	1.01	0.925	0.978	1.03	0.976	1.09	1.11	1.30
Nitrate + Nitrite (as N)	mg/L											
Nitrate + Nitrite (as N) (calculated)	mg/L	0.993	1.23	0.890	1.01	0.925	0.978	1.03	0.976	1.09	1.11	1.30
Nitrite (as N)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total kjeldahl nitrogen	mg/L											
Orthophosphate (dissolved, as P)	mg/L			<0.01	<0.01							
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L	0.07	<0.02					<0.02	<0.02		<0.050	
Phosphorus (total, by ICPMS/ICPOES)	mg/L			<0.020	0.03	<0.2	<0.02			<0.05		<0.050
Phosphorus (total, APHA 4500-P)	mg/L											
Potassium (dissolved)	mg/L	0.95	0.94					1.10	0.99		0.89	
Potassium (total)	mg/L			1.03	0.99	0.8	1.06			0.93		0.91

Guideline Notes for Reports for CSRD Refuse Disposal Sites Water Quality Results

1. Notes for Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentrations (GCDWQ MAC)

Note 1.1 for Turbidity:

Waterworks systems that use a surface water source or a groundwater source under the direct influence of surface water should filter the source water to meet health-based turbidity limits, as defined for specific treatment technologies. Where possible, filtration systems should be designed and operated to reduce turbidity levels as low as possible, with a treated water turbidity target of less than 0.1 NTU at all times. Where this is not achievable, the treated water turbidity levels from individual filters should meet the requirements described in GCDWQ.

For systems that use groundwater that is not under the direct influence of surface water, which are considered less vulnerable to faecal contamination, turbidity should generally be below 1.0 NTU.

For effective operation of the distribution system, it is good practice to ensure that water entering the distribution system has turbidity levels below 1.0 NTU.

Note 1.2 for Bromodichloromethane:

The maximum acceptable concentration (MAC) for trihalomethanes (THMs) in drinking water is 0.100 mg/L (100 µg/L) based on a locational running annual average of a minimum of quarterly samples taken at the point in the distribution system with the highest potential THM levels. Trihalomethanes refers to the total of chloroform, bromodichloromethane, dibromochloromethane and bromoform compounds.

Note 1.3 for Bromoform:

The maximum acceptable concentration (MAC) for trihalomethanes (THMs) in drinking water is 0.100 mg/L (100 µg/L) based on a locational running annual average of a minimum of quarterly samples taken at the point in the distribution system with the highest potential THM levels. Trihalomethanes refers to the total of chloroform, bromodichloromethane, dibromochloromethane and bromoform compounds.

Note 1.4 for Chloroform:

The maximum acceptable concentration (MAC) for trihalomethanes (THMs) in drinking water is 0.100 mg/L (100 µg/L) based on a locational running annual average of a minimum of quarterly samples taken at the point in the distribution system with the highest potential THM levels. Trihalomethanes refers to the total of chloroform, bromodichloromethane, dibromochloromethane and bromoform compounds.

Note 1.5 for Dibromochloromethane:

The maximum acceptable concentration (MAC) for trihalomethanes (THMs) in drinking water is 0.100 mg/L (100 µg/L) based on a locational running annual average of a minimum of quarterly samples taken at the point in the distribution system with the highest potential THM levels. Trihalomethanes refers to the total of chloroform, bromodichloromethane, dibromochloromethane and bromoform compounds.

Note 1.6 for Total Trihalomethanes (calculated):

Trihalomethanes refers to the total of chloroform, bromodichloromethane, dibromochloromethane and bromoform compounds. The maximum acceptable concentration (MAC) for trihalomethanes (THMs) in drinking water is 0.100 mg/L (100 µg/L) based on a locational running annual average of a minimum of quarterly samples taken at the point in the distribution system with the highest potential THM levels. Utilities should make every effort to maintain concentrations as low as reasonably achievable without compromising the effectiveness of disinfection.

Note 1.7 for Arsenic (dissolved):

Every effort should be made to maintain arsenic levels in drinking water as low as reasonably achievable.

Note 1.8 for Arsenic (total):

Every effort should be made to maintain arsenic levels in drinking water as low as reasonably achievable.

Note 1.9 for E. coli (counts):

MAC is none detectable per 100 mL

Note 1.10 for E. coli (MPN):

MAC is none detectable per 100 mL

Note 1.11 for Fecal coliforms (counts):

The GCDWQ does not have a guideline for fecal coliforms. The GCDWQ were revised in 2006 when the guideline for fecal coliforms was deleted, and a guideline for E. coli was added. However the GCDWQ has a guideline for total coliforms that includes the following statement: “The MAC of total coliforms in water leaving a treatment plant in a public system and throughout semi-public and private supply systems is none detectable per 100 mL.” Therefore a guideline of none detectable per 100 mL was used for fecal coliforms for this report.

Note that the Drinking Water Protection Regulation (2003), under the BC Drinking Water Protection Act, has a water quality standard for potable water for fecal coliforms of “No detectable fecal coliform bacteria per 100 ml”.

Note 1.12 for Fecal coliforms (MPN):

The GCDWQ does not have a guideline for fecal coliforms. The GCDWQ were revised in 2006 when the guideline for fecal coliforms was deleted, and a guideline for E. coli was added. However the GCDWQ has a guideline for total coliforms that includes the following statement: “The MAC of total coliforms in water leaving a treatment plant in a public system and throughout semi-public and private supply systems is none detectable per 100 mL.” Therefore a guideline of none detectable per 100 mL was used for fecal coliforms for this report.

Note that the Drinking Water Protection Regulation (2003), under the BC Drinking Water Protection Act, has a water quality standard for potable water for fecal coliforms of “No detectable fecal coliform bacteria per 100 ml”.

Note 1.13 for Total coliforms (counts):

The maximum acceptable concentration (MAC) of total coliforms in water leaving a treatment plant and in non-disinfected groundwater leaving the well is none detectable per 100 mL.

Total coliforms should be monitored in the distribution system because they are used to indicate changes in water quality. Detection of total coliforms from consecutive samples from the same site or from more than 10% of the samples collected in a given sampling period should be investigated.

Note 1.14 for Total coliforms (MPN):

The maximum acceptable concentration (MAC) of total coliforms in water leaving a treatment plant and in non-disinfected groundwater leaving the well is none detectable per 100 mL.
Total coliforms should be monitored in the distribution system because they are used to indicate changes in water quality. Detection of total coliforms from consecutive samples from the same site or from more than 10% of the samples collected in a given sampling period should be investigated.

Note 1.15 for Vinyl chloride:
Every effort should be made to maintain vinyl chloride levels in drinking water as low as reasonably achievable.

Note 1.16 for Nitrate + Nitrite (as N):
The MAC for Nitrate (as N) is 10 mg/L

Note 1.17 for Nitrate + Nitrite (as N) (calculated):
The MAC for Nitrate (as N) is 10 mg/L

2. Notes for Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives (GCDWQ AO)

Note 2.1 for pH:
The operational guideline for pH is a range of 7.0 to 10.5 in finished drinking water.

Note 2.2 for pH:
The operational guideline for pH is a range of 7.0 to 10.5 in finished drinking water.

Note 2.3 for Sulphate:
There may be a laxative effect in some individuals when sulphate levels exceed 500 mg/L. Health authorities should be notified of drinking water sources containing above 500 mg/L.

Note 2.4 for Aluminum (dissolved):
This is an operational guidance value, designed to apply only to drinking water treatment plants using aluminum-based coagulants. The operational guidance value of 0.1 mg/L applies to conventional treatment plants, and 0.2 mg/L applies to other types of treatment systems.

Note 2.5 for Aluminum (total):
This is an operational guidance value, designed to apply only to drinking water treatment plants using aluminum-based coagulants. The operational guidance value of 0.1 mg/L applies to conventional treatment plants, and 0.2 mg/L applies to other types of treatment systems.

3. Notes for BC CSR, Schedule 3.2, Generic Numerical Water Standards for Freshwater Aquatic Life (2017 and updates) (BC CSR AW(F))

General Notes:
Aquatic life standards assume minimum 1:10 dilution available, and are to protect freshwater life.
Standards for all organic substances are for total substance concentrations. Any water sample to be analyzed for organic substances should not be filtered.
Standards for surface water samples to be analyzed for heavy metals, metalloids and inorganic ions are total substance concentrations. In addition, it is recommended that surface water samples being analyzed for heavy metals, metalloids and inorganic ions should also be analyzed for dissolved substance concentrations.
Standards for groundwater samples for heavy metals, metalloids and inorganic ions are for dissolved substance concentrations. In addition, it is recommended that groundwater samples being analyzed for heavy metals, metalloids and inorganic ions should also be analyzed for total substance concentrations.

Note 3.1 for Fluoride:
The standard for fluoride is:
2000 µg/L @ H < 50
3000 µg/L @ H ≥ 50
Where H means water hardness in mg/L as CaCO3.

Note 3.2 for Sulphate:
The standard for sulfate is:
1280 mg/L @ H ≤ 30
2180 mg/L @ H 31 - 75
3090 mg/L @ H 76 - 180
4290 mg/L @ H > 180
Where H means water hardness in mg/L as CaCO3.

Note 3.3 for Cadmium (dissolved):
The standard for cadmium is as follows:
0.5 µg/L @ H < 30
1.5 µg/L @ H 30 - < 90
2.5 µg/L @ H 90 - < 150
3.5 µg/L @ H 150 - < 210
4 µg/L @ H ≥ 210
Where H means water hardness in mg/L as CaCO3.

Note 3.4 for Cadmium (total):
The standard for cadmium is as follows:
0.5 µg/L @ H < 30
1.5 µg/L @ H 30 - < 90
2.5 µg/L @ H 90 - < 150
3.5 µg/L @ H 150 - < 210
4 µg/L @ H ≥ 210
Where H means water hardness in mg/L as CaCO3.

Note 3.5 for Chromium (dissolved):

Analytical results for chromium (all species) in water may be used to demonstrate compliance with the standards. Where the standards cannot be met based on analytical results for chromium (all species), chromium speciation may be necessary. Standard is 10 µg/L for chromium, hexavalent. Standard is 90 µg/L for chromium, trivalent. The standard of 10 µg/L was used to identify exceedances for dissolved chromium in order to demonstrate compliance with the standards.

Note 3.6 for Chromium (total):
Analytical results for chromium (all species) in water may be used to demonstrate compliance with the standards. Where the standards cannot be met based on analytical results for chromium (all species), chromium speciation may be necessary. Standard is 10 µg/L for chromium, hexavalent. Standard is 90 µg/L for chromium, trivalent. The standard of 10 µg/L was used to identify exceedances for total chromium in order to demonstrate compliance with the standards.

Note 3.7 for Copper (dissolved):
The standard for copper is as follows:
20 µg/L @ H < 50
30 µg/L @ H 50 - < 75
40 µg/L @ H 75 - < 100
50 µg/L @ H 100 - < 125
60 µg/L @ H 125 - < 150
70 µg/L @ H 150 - < 175
80 µg/L @ H 175 - < 200
90 µg/L @ H ≥ 200
Where H means water hardness in mg/L as CaCO3.
Note 3.8 for Copper (total):
The standard for copper is as follows:
20 µg/L @ H < 50
30 µg/L @ H 50 - < 75
40 µg/L @ H 75 - < 100
50 µg/L @ H 100 - < 125
60 µg/L @ H 125 - < 150
70 µg/L @ H 150 - < 175
80 µg/L @ H 175 - < 200
90 µg/L @ H ≥ 200
Where H means water hardness in mg/L as CaCO3.
Note 3.9 for Lead (dissolved):
The standard for lead is as follows:
40 µg/L @ H < 50
50 µg/L @ H 50 - < 100
60 µg/L @ H 100 - < 200
110 µg/L @ H 200 - < 300
160 µg/L @ ≥ 300
Where H means water hardness in mg/L as CaCO3.
Note 3.10 for Lead (total):
The standard for lead is as follows:
40 µg/L @ H < 50
50 µg/L @ H 50 - < 100
60 µg/L @ H 100 - < 200
110 µg/L @ H 200 - < 300
160 µg/L @ ≥ 300
Where H means water hardness in mg/L as CaCO3.
Note 3.11 for Nickel (dissolved):
The standard for nickel is as follows:
250 µg/L @ H < 60
650 µg/L @ H 60 - < 120
1,100 µg/L @ H 120 - < 180
1,500 µg/L @ H ≥ 180
Where H means water hardness in mg/L as CaCO3.
Note 3.12 for Nickel (total):
The standard for nickel is as follows:
250 µg/L @ H < 60
650 µg/L @ H 60 - < 120
1,100 µg/L @ H 120 - < 180
1,500 µg/L @ H ≥ 180
Where H means water hardness in mg/L as CaCO3.
Note 3.13 for Silver (dissolved):
The standard for silver is:
0.5 µg/L @ H ≤ 100
15 µg/L @ H > 100
Where H means water hardness in mg/L as CaCO3.
Note 3.14 for Silver (total):

The standard for silver is:
0.5 µg/L @ H ≤ 100
15 µg/L @ H > 100
Where H means water hardness in mg/L as CaCO3.

Note 3.15 for Zinc (dissolved):
The standard for zinc is as follows:
75 µg/L @ H < 90
150 µg/L @ H = 90 - < 100
900 µg/L @ H = 100 - < 200
1,650 µg/L @ H = 200 - < 300
2,400 µg/L @ H = 300 - < 400
3,150 µg/L @ H = 400 - < 500
If H ≥ 500 then use following formula:
Standard (µg/L) = 10 x [7.5 +{(0.75)(H – 90)}]
Where H means water hardness in mg/L as CaCO3.
There are special ministry approval and data reporting requirements for water hardness values ≥ 500 mg/L as CaCO3.
Reference is Schedule 3.2 and Protocol 10.

Note 3.16 for Zinc (total):
The standard for zinc is as follows:
75 µg/L @ H < 90
150 µg/L @ H = 90 - < 100
900 µg/L @ H = 100 - < 200
1,650 µg/L @ H = 200 - < 300
2,400 µg/L @ H = 300 - < 400
3,150 µg/L @ H = 400 - < 500
If H ≥ 500 then use following formula:
Standard (µg/L) = 10 x [7.5 +{(0.75)(H – 90)}]
Where H means water hardness in mg/L as CaCO3.
There are special ministry approval and data reporting requirements for water hardness values ≥ 500 mg/L as CaCO3.
Reference is Schedule 3.2 and Protocol 10.

Note 3.17 for VHw6-10:
VHw6-10 - Volatile Hydrocarbons (nC6-nC10) in water as defined in the 2015 British Columbia Environmental Laboratory Manual, as updated from time to time. Standard is applicable at all sites, irrespective of water use.

Note 3.18 for VPHw:
VPHw - Volatile Petroleum Hydrocarbons in water as defined in the 2015 British Columbia Environmental Laboratory Manual, as updated from time to time.

Note 3.19 for Ammonia (total, as N):
Standard varies with pH and temperature. 10 degrees C is assumed. Consult a director for further advice.
The standard for ammonia, total (as N) is:
1,310 µg/L @ pH ≥ to 8.5
3,700 µg/L @ pH 8.0 - < 8.5
11,300 µg/L @ pH 7.5 - < 8.0
18,500 µg/L @ pH 7.0 - < 7.5
18,400 µg/L @ pH < 7.0

Note 3.20 for Nitrate (as N):
Standard may not protect all amphibians. Consult director for further advice.

Note 3.21 for Nitrate + Nitrite (as N):
Standard may not protect all amphibians. Consult director for further advice.

Note 3.22 for Nitrate + Nitrite (as N) (calculated):
Standard may not protect all amphibians. Consult director for further advice.

Note 3.23 for Nitrite (as N):
Standard varies with chloride concentration. Consult a director for further advice.
The standard for nitrite (as N) is:
200 µg/L (Cl < 2 mg/L)
400 µg/L (Cl 2 - < 4 mg/L)
600 µg/L (Cl 4 - < 6 mg/L)
800 µg/L (Cl 6 - < 8 mg/L)
1,000 µg/L (Cl 8 - < 10 mg/L)
2,000 µg/L (Cl ≥ 10 mg/L)

4. Notes for BC CSR, Schedule 3.2, Generic Numerical Water Standards for Drinking Water (2017 and updates) (BC CSR DW)

General Notes:
Drinking water standards are for unfiltered samples obtained at the point of consumption. Heavy metals, metalloids and inorganic ions are expressed as total substance concentrations unless otherwise indicated.

Note 4.1 for 1,2-Dichlorobenzene:
Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.2 for 1,4-Dichlorobenzene:
Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.3 for Monochlorobenzene:

Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.4 for Chloride:
Standard to protect against taste and odour concerns.

Note 4.5 for Sulphate:
Standard to protect against taste and odour concerns.

Note 4.6 for Bromodichloromethane:
Standard is specific for total trihalomethanes. Sum of the concentrations of bromodichloromethane (BDCM), dibromochloromethane (DBCM), bromoform (tribromomethane) and chloroform (trichloromethane) must not exceed the standard specified.

Note 4.7 for Bromoform:
Standard is specific for total trihalomethanes. Sum of the concentrations of bromodichloromethane (BDCM), dibromochloromethane (DBCM), bromoform (tribromomethane) and chloroform (trichloromethane) must not exceed the standard specified.

Note 4.8 for Chloroform:
Standard is specific for total trihalomethanes. Sum of the concentrations of bromodichloromethane (BDCM), dibromochloromethane (DBCM), bromoform (tribromomethane) and chloroform (trichloromethane) must not exceed the standard specified.

Note 4.9 for Dibromochloromethane:
Standard is specific for total trihalomethanes. Sum of the concentrations of bromodichloromethane (BDCM), dibromochloromethane (DBCM), bromoform (tribromomethane) and chloroform (trichloromethane) must not exceed the standard specified.

Note 4.10 for Total Trihalomethanes (calculated):
Standard is specific for total trihalomethanes. Sum of the concentrations of bromodichloromethane (BDCM), dibromochloromethane (DBCM), tribromomethane (bromoform) and trichloromethane (chloroform) must not exceed the standard specified.

Note 4.11 for Aluminum (dissolved):
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.
Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.12 for Aluminum (total):
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.
Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.13 for Chromium (dissolved):
Analytical results for chromium (all species) in water may be used to demonstrate compliance with the standards. Where the standards cannot be met based on analytical results for chromium (all species), chromium speciation may be necessary. Standard is 50 µg/L for chromium, hexavalent. Standard is 6000 µg/L for chromium, trivalent. The standard of 50 µg/L was used to identify exceedances for dissolved chromium in order to demonstrate compliance with the standards.

Note 4.14 for Chromium (total):
Analytical results for chromium (all species) in water may be used to demonstrate compliance with the standards. Where the standards cannot be met based on analytical results for chromium (all species), chromium speciation may be necessary. Standard is 50 µg/L for chromium, hexavalent. Standard is 6000 µg/L for chromium, trivalent. The standard of 50 µg/L was used to identify exceedances for total chromium in order to demonstrate compliance with the standards.

Note 4.15 for Copper (dissolved):
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.
Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.16 for Copper (total):
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.
Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.17 for Iron (dissolved):
Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as
(a) item A6, A7, A8 or A11
(b) item C1, C2, C3, C4 or C6,
(c) item D2, D3, D5, or D6
(d) item E4, or
(e) item H14.
Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as item H11 or H20, but only if the site was used for the purpose or activity in conjunction with or as a result of the site also being used for at least one of the purposes or activities set out above.
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups. Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.18 for Iron (total):

Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as
(a) item A6, A7, A8 or A11
(b) item C1, C2, C3, C4 or C6,
(c) item D2, D3, D5, or D6
(d) item E4, or
(e) item H14.
Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as item H11 or H20, but only if the site was used for the purpose or activity in conjunction with or as a result of the site also being used for at least one of the purposes or activities set out above.
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.
Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.19 for Manganese (dissolved):
Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as
(a) item B1
(b) item C1, C3 or C4
(c) item D2, D3, D5, or D6
(d) item E4, or
(e) item H3 or H14.
Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as item H11 or H20, but only if the site was used for the purpose or activity in conjunction with or as a result of the site also being used for at least one of the purposes or activities set out above.
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.
Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.20 for Manganese (total):
Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as
(a) item B1
(b) item C1, C3 or C4
(c) item D2, D3, D5, or D6
(d) item E4, or
(e) item H3 or H14.
Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as item H11 or H20, but only if the site was used for the purpose or activity in conjunction with or as a result of the site also being used for at least one of the purposes or activities set out above.
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.
Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.21 for Sodium (dissolved):
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.

Note 4.22 for Sodium (total):
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.

Note 4.23 for Zinc (dissolved):
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.

Note 4.24 for Zinc (total):
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.

Note 4.25 for Methyl tert-butyl ether (MTBE):
Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.
Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.26 for VHw6-10:
VHw6-10 - Volatile Hydrocarbons (nC6-nC10) in water as defined in the 2015 British Columbia Environmental Laboratory Manual, as updated from time to time. Standard is applicable at all sites, irrespective of water use.

Note 4.27 for Ethylbenzene:
Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.28 for Toluene:
Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

Note 4.29 for Nitrate (as N):
Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

Note 4.30 for Nitrate + Nitrite (as N):
Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

Note 4.31 for Nitrate + Nitrite (as N) (calculated):

Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

Legend for Reports for CSRD Refuse Disposal Sites Water Quality Results

<	Less than reported detection limit
>	Greater than reported upper detection limit
>=	Greater than or equal to
A	Absent
BC CSR LW	BC CSR, Schedule 3.2, Generic Numerical Water Standards for Livestock (2017 and updates)
Calc	Calculated guideline or standard. The guideline or standard is dependent on the value of one or more other analytes, and is calculated from a formula or table.
L	Laboratory reading type (Lab result)
m asl	metres above sea level
N	Narrative type of guideline or standard, or Result Note.
ND	Non-detect. Result is less than lower detection limit.
NG	No Guideline
NR	No Result
NS	No Standard
NT	Not Tested
OG	Overgrown
P	Present
PR	Presumptive
TK	Test kit reading type (Field result)
TNTC	Too numerous to count
	Highlighted value has a lower detection limit that is greater than the guideline/standard maximum and/or the guideline/standard minimum, or has an upper detection limit that is less than the guideline/standard maximum and/or the guideline/standard minimum.
BC CSR LW	Highlighted value exceeds BC CSR LW
SL Criteria Override	Highlighted value exceeds sampling location criteria override

Golden Refuse Disposal Site

Water Quality Results

	Sampling Location		Runoff 1	Runoff 2	Runoff 3
	Date Sampled		05-Apr-17	05-Apr-17	30-Mar-17
	Lab Sample ID		7040434-01	7040434-02	7040370-01
	Sample Type		Normal	Normal	
Analyte	**Unit**	**Guideline** BC CSR LW			
Field Results					
Conductivity	µS/cm	NG	2370	13170	Not Measured
Oxidation reduction potential	mV	NG	-2	-112	Not Measured
pH		NG	7.4	7.6	Not Measured
Temperature	°C	NG	4.2	4.3	Not Measured
Lab Results					
Chlorinated Hydrocarbons					
1,2-Dichlorobenzene	mg/L	NG		<0.0005	<0.0005
1,3-Dichlorobenzene	mg/L	NG		<0.0010	<0.0010
1,4-Dichlorobenzene	mg/L	NG		<0.0010	<0.0010
1,1-Dichloroethane	mg/L	NG		<0.0010	<0.0010
1,2-Dichloroethane	mg/L	0.005		0.0019	<0.0010
1,1-Dichloroethylene	mg/L	NG		<0.0010	<0.0010
cis-1,2-Dichloroethylene	mg/L	NG		<0.0010	<0.0010
trans-1,2-Dichloroethylene	mg/L	NG		<0.0010	<0.0010
Monochlorobenzene	mg/L	NG		<0.0010	<0.0010
1,1,2,2-Tetrachloroethane	mg/L	NG		<0.0005	<0.0005
Tetrachloroethylene	mg/L	NG		<0.0010	<0.0010
1,1,1-Trichloroethane	mg/L	NG		<0.0010	<0.0010
1,1,2-Trichloroethane	mg/L	NG		<0.0010	<0.0010
Trichloroethylene	mg/L	0.050		<0.0010	<0.0010
General					
Alkalinity (bicarbonate, as CaCO3)	mg/L	NG	3050	9700	6010
Alkalinity (carbonate, as CaCO3)	mg/L	NG	<1.0	<1.0	<1
Alkalinity (hydroxide, as CaCO3)	mg/L	NG	<1.0	<1.0	<1
Alkalinity (phenolphthalein, as CaCO3)	mg/L	NG	<1.0	<1.0	<1
Alkalinity (total, as CaCO3)	mg/L	NG	3050	9700	6010
Bicarbonate Alkalinity (as HCO3)	mg/L	NG	3720	11800	7330
Carbonate Alkalinity (as CO3)	mg/L	NG	<0.600	<0.600	<0.600
Hydroxide Alkalinity (as OH)	mg/L	NG	<0.340	<0.340	<0.340
Bromide	mg/L	NG	1.82	<10.0	<0.10
Chloride	mg/L	600	708	1230	5.45
Conductivity	µS/cm	NG	8440	13800	324
Fluoride	mg/L	1.000 [1.1]	<1.00	<1.00	0.47
Hardness, Total (dissolved as CaCO3)	mg/L	NG		2090	602
pH		NG		7.70	7.85
Sulphate	mg/L	1000	153	32.7	13.0
Total suspended solids	mg/L	NG		307	
Turbidity	NTU	NG		212	>4000
Halogenated Methanes					
Bromodichloromethane	mg/L	0.100		<0.0010	<0.0010
Bromoform	mg/L	0.100		<0.0010	<0.0010
Carbon tetrachloride	mg/L	0.005		<0.0005	<0.0005
Chloroform	mg/L	0.100		<0.0010	<0.0010
Dibromochloromethane	mg/L	0.100		<0.0010	<0.0010
Dibromomethane	mg/L	NG		<0.0010	<0.0010
Dichloromethane	mg/L	0.050		<0.0030	<0.0030
Total Trihalomethanes (calculated)	mg/L	NG		<0.0020	<0.0020
Trichlorofluoromethane	mg/L	NG		<0.0010	<0.0010
Metals					

Golden Refuse Disposal Site
Water Quality Results

		Sampling Location	Runoff 1	Runoff 2	Runoff 3
		Date Sampled	05-Apr-17	05-Apr-17	30-Mar-17
		Lab Sample ID	7040434-01	7040434-02	7040370-01
		Sample Type	Normal	Normal	
Analyte	**Unit**	**Guideline**			
		BC CSR LW			
Aluminum (total)	mg/L	5.000		2.17	41.1
Antimony (total)	mg/L	NG		0.0063	0.0008
Arsenic (total)	mg/L	0.025		0.0524	0.0123
Barium (total)	mg/L	NG		0.259	0.421
Beryllium (total)	mg/L	0.100		0.0001	0.0014
Bismuth (total)	mg/L	NG		<0.0001	0.0003
Boron (total)	mg/L	5.000		4.90	0.164
Cadmium (total)	mg/L	0.080		0.00048	0.00011
Calcium (total)	mg/L	1000		382	174
Chromium (total)	mg/L	0.050 [1,2]		0.126	0.0530
Cobalt (total)	mg/L	1.000		0.0371	0.0191
Copper (total)	mg/L	0.300		0.0227	0.0330
Iron (total)	mg/L	NG		46.0	39.2
Lead (total)	mg/L	0.100		0.0119	0.0296
Lithium (total)	mg/L	5.000		0.238	0.0402
Magnesium (total)	mg/L	NG		276	40.6
Manganese (total)	mg/L	NG		1.41	0.710
Mercury (total)	mg/L	0.002		0.00004	0.00010
Molybdenum (total)	mg/L	0.050		0.0061	0.0025
Nickel (total)	mg/L	1.000		0.190	0.0400
Selenium (total)	mg/L	0.030		0.0007	<0.0005
Silicon (total, as Si)	mg/L	NG		29.8	73.8
Silver (total)	mg/L	NG		0.00015	<0.00005
Sodium (total)	mg/L	NG		1460	8.12
Strontium (total)	mg/L	NG		2.40	0.579
Sulphur (total)	mg/L	NG		31	4
Tellurium (total)	mg/L	NG		<0.0002	<0.0002
Thallium (total)	mg/L	NG		<0.00002	0.00032
Thorium (total)	mg/L	NG		0.0004	0.0099
Tin (total)	mg/L	NG		0.0093	0.0013
Titanium (total)	mg/L	NG		0.069	1.40
Uranium (total)	mg/L	0.200		0.00069	0.00239
Vanadium (total)	mg/L	0.100		0.011	0.042
Zinc (total)	mg/L	2.000		0.576	0.094
Zirconium (total)	mg/L	NG		0.0071	0.0280
Miscellaneous Organic Substances					
Chloroethane	mg/L	NG		<0.0020	<0.0020
1,2-Dibromoethane	mg/L	NG		<0.0002	<0.0002
1,2-Dichloropropane	mg/L	NG		<0.0010	<0.0010
1,3-Dichloropropene	mg/L	NG		<0.0010	<0.0010
Methyl tert-butyl ether (MTBE)	mg/L	11.000		<0.0010	<0.0010
Vinyl chloride	mg/L	NG		<0.0010	<0.0010
Monocyclic Aromatic Hydrocarbons (MAHs)					
Benzene	mg/L	NG		0.0011	<0.0005
Ethylbenzene	mg/L	NG		0.0028	<0.0010
Styrene	mg/L	NG		<0.0010	<0.0010
Toluene	mg/L	NG		0.104	<0.0010
Xylenes	mg/L	NG		0.0067	<0.0020
Nutrients					
Ammonia (total, as N)	mg/L	NG		928	0.792
Nitrate (as N)	mg/L	100 [1,3]	2.78	<0.100	0.214

Golden Refuse Disposal Site

Water Quality Results

	Sampling Location	Runoff 1	Runoff 2	Runoff 3
	Date Sampled	05-Apr-17	05-Apr-17	30-Mar-17
	Lab Sample ID	7040434-01	7040434-02	7040370-01
	Sample Type	Normal	Normal	
Analyte	Unit	Guideline BC CSR LW		
Nitrate + Nitrite (as N) (calculated)	mg/L	100 [1,4]	2.78	<0.141	0.235
Nitrite (as N)	mg/L	10.000	<0.100	<0.100	0.021
Phosphorus (total, by ICPMS/ICPOES)	mg/L	NG		13.1	0.61
Potassium (total)	mg/L	NG		852	16.6

Guideline Notes for Reports for CSRD Refuse Disposal Sites Water Quality Results

1. Notes for BC CSR, Schedule 3.2, Generic Numerical Water Standards for Livestock (2017 and updates) (BC CSR LW)

General Notes:

Standards for all organic substances are for total substance concentrations. Any water sample to be analyzed for organic substances should not be filtered.

Standards for surface water samples to be analyzed for heavy metals, metalloids and inorganic ions are total substance concentrations. In addition, it is recommended that surface water samples being analyzed for heavy metals, metalloids and inorganic ions should also be analyzed for dissolved substance concentrations.

Standards for groundwater samples for heavy metals, metalloids and inorganic ions are for dissolved substance concentrations. In addition, it is recommended that groundwater samples being analyzed for heavy metals, metalloids and inorganic ions should also be analyzed for total substance concentrations.

Note 1.1 for Fluoride:

Standard varies with type of livestock. Consult a director for further advice.

Note 1.2 for Chromium (total):

Analytical results for chromium (all species) in water may be used to demonstrate compliance with the standards. Where the standards cannot be met based on analytical results for chromium (all species), chromium speciation may be necessary.

Standard is 50 µg/L for chromium, hexavalent. Standard is 50 µg/L for chromium, trivalent. The standard of 50 µg/L was used to identify exceedances for total chromium in order to demonstrate compliance with the standards.

Note 1.3 for Nitrate (as N):

Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

Note 1.4 for Nitrate + Nitrite (as N) (calculated):

Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

Appendix D

Water Quality Reports

CERTIFICATE OF ANALYSIS

REPORTED TO	Western Water Associates Ltd 106 - 5145 26th Street Vernon, BC V1T 8G4	**TEL** **FAX**	(250) 541-1030 (250) 575-4764
ATTENTION	Bryer Manwell	**WORK ORDER**	7040370
PO NUMBER		**RECEIVED / TEMP**	2017-04-06 07:30 / 2°C
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-07
PROJECT INFO	14-024-16	**COC NUMBER**	B 47372

General Comments:

CARO Analytical Services employs methods which are conducted according to procedures accepted by appropriate regulatory agencies, and/or are conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the Chain of Custody or Sample Requisition document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Authorized By: **Sara Gulenchyn, B.Sc, P.Chem.**
Client Service Coordinator

If you have any questions or concerns, please contact me at sgulenchyn@caro.ca

TABLE OF CONTENTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040370
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-07

ANALYSIS INFORMATION

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040370
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-07

Analysis Description	Method Reference	Technique	Location
Alkalinity in Water	APHA 2320 B*	Titration with H2SO4	Kelowna
Ammonia, Total in Water	APHA 4500-NH3 G*	Automated Colorimetry (Phenate)	Kelowna
Anions by IC in Water	APHA 4110 B	Ion Chromatography with Chemical Suppression of Eluent Conductivity	Kelowna
Conductivity in Water	APHA 2510 B	Conductivity Meter	Kelowna
Hardness (as CaCO3) in Water	APHA 2340 B*	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Estimated)	N/A
pH in Water	APHA 4500-H+ B	Electrometry	Kelowna
Total Metals by ICPMS in Water	APHA 3030 E* / APHA 3125 B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	Richmond
Turbidity in Water	APHA 2130 B	Nephelometry	Kelowna
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260B	Purge&Trap / GC-MS (SIM)	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Method Reference Descriptions:

APHA	Standard Methods for the Examination of Water and Wastewater, 22nd Edition, American Public Health Association/American Water Works Association/Water Environment Federation
EPA	United States Environmental Protection Agency Test Methods

Glossary of Terms:

MRL	Method Reporting Limit
<	Less than the Reported Detection Limit (RDL) - the RDL may be higher than the MRL due to various factors such as dilutions, limited sample volume, high moisture, or interferences
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
pH units	pH < 7 = acidic, ph > 7 = basic
µg/L	Micrograms per litre
µS/cm	Microsiemens per centimetre

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040370
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-07

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Runoff 3 (7040370-01) [Water] Sampled: 2017-03-30 15:00						CT1, CT2, F2, PRES
Anions						
Bromide	< 0.10	0.10	mg/L	N/A	2017-04-07	
Chloride	**5.45**	0.10	mg/L	N/A	2017-04-07	
Fluoride	**0.47**	0.10	mg/L	N/A	2017-04-07	
Nitrate (as N)	**0.214**	0.010	mg/L	N/A	2017-04-07	HT1
Nitrite (as N)	**0.021**	0.010	mg/L	N/A	2017-04-07	HT1
Sulfate	**13.0**	1.0	mg/L	N/A	2017-04-07	
General Parameters						
Alkalinity, Total (as CaCO3)	**6010**	2	mg/L	N/A	2017-04-07	
Alkalinity, Phenolphthalein (as CaCO3)	< 1	2	mg/L	N/A	2017-04-07	
Alkalinity, Bicarbonate (as CaCO3)	**6010**	2	mg/L	N/A	2017-04-07	
Alkalinity, Carbonate (as CaCO3)	< 1	2	mg/L	N/A	2017-04-07	
Alkalinity, Hydroxide (as CaCO3)	< 1	2	mg/L	N/A	2017-04-07	
Bicarbonate (HCO3)	**7330**	1.22	mg/L	N/A	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	N/A	
Ammonia, Total (as N)	**0.792**	0.020	mg/L	N/A	2017-04-07	
Conductivity (EC)	**324**	2.0	µS/cm	N/A	2017-04-07	
pH	**7.85**	0.01	pH units	N/A	2017-04-07	HT2
Turbidity	**> 4000 NTU**	0.10	NTU	N/A	2017-04-07	RA4
Calculated Parameters						
Hardness, Total (as CaCO3)	**602**	5.00	mg/L	N/A	N/A	
Total Metals						
Aluminum, total	**41.1**	0.005	mg/L	2017-04-07	2017-04-07	
Antimony, total	**0.0008**	0.0001	mg/L	2017-04-07	2017-04-07	
Arsenic, total	**0.0123**	0.0005	mg/L	2017-04-07	2017-04-07	
Barium, total	**0.421**	0.005	mg/L	2017-04-07	2017-04-07	
Beryllium, total	**0.0014**	0.0001	mg/L	2017-04-07	2017-04-07	
Bismuth, total	**0.0003**	0.0001	mg/L	2017-04-07	2017-04-07	
Boron, total	**0.164**	0.004	mg/L	2017-04-07	2017-04-07	
Cadmium, total	**0.00011**	0.00001	mg/L	2017-04-07	2017-04-07	
Calcium, total	**174**	0.2	mg/L	2017-04-07	2017-04-07	
Chromium, total	**0.0530**	0.0005	mg/L	2017-04-07	2017-04-07	
Cobalt, total	**0.0191**	0.00005	mg/L	2017-04-07	2017-04-07	
Copper, total	**0.0330**	0.0002	mg/L	2017-04-07	2017-04-07	
Iron, total	**39.2**	0.01	mg/L	2017-04-07	2017-04-07	
Lead, total	**0.0296**	0.0001	mg/L	2017-04-07	2017-04-07	
Lithium, total	**0.0402**	0.0001	mg/L	2017-04-07	2017-04-07	
Magnesium, total	**40.6**	0.01	mg/L	2017-04-07	2017-04-07	
Manganese, total	**0.710**	0.0002	mg/L	2017-04-07	2017-04-07	
Mercury, total	**0.00010**	0.00002	mg/L	2017-04-07	2017-04-07	
Molybdenum, total	**0.0025**	0.0001	mg/L	2017-04-07	2017-04-07	
Nickel, total	**0.0400**	0.0002	mg/L	2017-04-07	2017-04-07	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040370
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-07

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Runoff 3 (7040370-01) [Water] Sampled: 2017-03-30 15:00, Continued						CT1, CT2, F2, PRES
Total Metals, Continued						
Phosphorus, total	**0.61**	0.05	mg/L	2017-04-07	2017-04-07	
Potassium, total	**16.6**	0.02	mg/L	2017-04-07	2017-04-07	
Selenium, total	< 0.0005	0.0005	mg/L	2017-04-07	2017-04-07	
Silicon, total	**73.8**	0.5	mg/L	2017-04-07	2017-04-07	
Silver, total	< 0.00005	0.00005	mg/L	2017-04-07	2017-04-07	
Sodium, total	**8.12**	0.02	mg/L	2017-04-07	2017-04-07	
Strontium, total	**0.579**	0.001	mg/L	2017-04-07	2017-04-07	
Sulfur, total	**4**	1	mg/L	2017-04-07	2017-04-07	
Tellurium, total	< 0.0002	0.0002	mg/L	2017-04-07	2017-04-07	
Thallium, total	**0.00032**	0.00002	mg/L	2017-04-07	2017-04-07	
Thorium, total	**0.0099**	0.0001	mg/L	2017-04-07	2017-04-07	
Tin, total	**0.0013**	0.0002	mg/L	2017-04-07	2017-04-07	
Titanium, total	**1.40**	0.005	mg/L	2017-04-07	2017-04-07	
Uranium, total	**0.00239**	0.00002	mg/L	2017-04-07	2017-04-07	
Vanadium, total	**0.042**	0.001	mg/L	2017-04-07	2017-04-07	
Zinc, total	**0.094**	0.004	mg/L	2017-04-07	2017-04-07	
Zirconium, total	**0.0280**	0.0001	mg/L	2017-04-07	2017-04-07	
Volatile Organic Compounds (VOC)						
Benzene	< 0.5	0.5	µg/L	N/A	2017-04-07	
Bromodichloromethane	< 1.0	1.0	µg/L	N/A	2017-04-07	
Bromoform	< 1.0	1.0	µg/L	N/A	2017-04-07	
Carbon tetrachloride	< 0.5	0.5	µg/L	N/A	2017-04-07	
Chlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-07	
Chloroethane	< 2.0	2.0	µg/L	N/A	2017-04-07	
Chloroform	< 1.0	1.0	µg/L	N/A	2017-04-07	
Dibromochloromethane	< 1.0	1.0	µg/L	N/A	2017-04-07	
1,2-Dibromoethane	< 0.2	0.2	µg/L	N/A	2017-04-07	
Dibromomethane	< 1.0	1.0	µg/L	N/A	2017-04-07	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	N/A	2017-04-07	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-07	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-07	
1,1-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-07	
1,2-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-07	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-07	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-07	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-07	
1,2-Dichloropropane	< 1.0	1.0	µg/L	N/A	2017-04-07	
1,3-Dichloropropene	< 1.0	1.0	µg/L	N/A	2017-04-07	
Ethylbenzene	< 1.0	1.0	µg/L	N/A	2017-04-07	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	N/A	2017-04-07	
Dichloromethane	< 3.0	3.0	µg/L	N/A	2017-04-07	
Styrene	< 1.0	1.0	µg/L	N/A	2017-04-07	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	N/A	2017-04-07	
Tetrachloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-07	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040370
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-07

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Runoff 3 (7040370-01) [Water] Sampled: 2017-03-30 15:00, Continued						CT1, CT2, F2, PRES
Volatile Organic Compounds (VOC), Continued						
Toluene	< 1.0	1.0	µg/L	N/A	2017-04-07	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-07	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-07	
Trichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-07	
Trichlorofluoromethane	< 1.0	1.0	µg/L	N/A	2017-04-07	
Vinyl chloride	< 1.0	1.0	µg/L	N/A	2017-04-07	
Xylenes (total)	< 2.0	2.0	µg/L	N/A	2017-04-07	
Surrogate: Toluene-d8	*102*	*70-130*	%	*N/A*	*2017-04-07*	
Surrogate: 4-Bromofluorobenzene	*90*	*70-130*	%	*N/A*	*2017-04-07*	
Surrogate: 1,4-Dichlorobenzene-d4	*77*	*70-130*	%	*N/A*	*2017-04-07*	

Sample / Analysis Qualifiers:

CT1	Incorrect Container(s) supplied for VOC, Hg analysis
CT2	Excessive headspace in sample container - VOC results may be compromised.
F2	The sample was not field-preserved with HNO3 and was therefore preserved in the laboratory and held for at least 16 hours prior to analysis for total metals.
HT1	The sample was prepared and/or analyzed past the recommended holding time.
HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
PRES	Sample has been preserved for VOC, NH3 in the laboratory and the holding time has been extended.
RA4	This in an estimated value. The result was over the calibration range, and further dilution was not possible.

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040370
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-07

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory environment
- **Duplicate (Dup)**: Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- **Blank Spike (BS)**: A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- **Standard Reference Material (SRM)**: A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Anions, Batch B7D0342										
Blank (B7D0342-BLK2)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Bromide	< 0.10	0.10	mg/L							
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
LCS (B7D0342-BS2)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Bromide	3.99	0.10	mg/L	4.00		100	85-115			
Chloride	15.5	0.10	mg/L	16.0		97	90-110			
Fluoride	3.90	0.10	mg/L	4.00		98	88-108			
Nitrate (as N)	3.96	0.010	mg/L	4.00		99	93-108			
Nitrite (as N)	1.79	0.010	mg/L	2.00		90	83-110			
Sulfate	15.8	1.0	mg/L	16.0		99	91-109			
General Parameters, Batch B7D0189										
Blank (B7D0189-BLK1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B7D0189-BLK2)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
LCS (B7D0189-BS1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Ammonia, Total (as N)	1.00	0.020	mg/L	1.00		100	86-111			
LCS (B7D0189-BS2)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Ammonia, Total (as N)	< 0.020	0.020	mg/L	1.00			86-111			
General Parameters, Batch B7D0360										

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040370
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-07

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
General Parameters, Batch B7D0360, Continued										
Blank (B7D0360-BLK1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Turbidity	< 0.10	0.10	NTU							
LCS (B7D0360-BS1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Turbidity	39.2	0.10	NTU	40.0		98	90-110			
Duplicate (B7D0360-DUP1)		**Source: 7040370-01**		Prepared: 2017-04-07, Analyzed: 2017-04-07						
Turbidity	4000	0.10	NTU		> 4000 NTU			< 1	15	RA4
General Parameters, Batch B7D0371										
Blank (B7D0371-BLK1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Alkalinity, Total (as CaCO3)	< 1	2	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1	2	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1	2	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1	2	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1	2	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B7D0371-BS1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Alkalinity, Total (as CaCO3)	103	2	mg/L	100		103	92-106			
LCS (B7D0371-BS2)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Conductivity (EC)	1420	2.0	µS/cm	1410		100	95-104			
Reference (B7D0371-SRM1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
pH	6.99	0.01	pH units	7.00		100	98-102			HT2
Total Metals, Batch B7D0379										
Blank (B7D0379-BLK1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Aluminum, total	< 0.005	0.005	mg/L							
Antimony, total	< 0.0001	0.0001	mg/L							
Arsenic, total	< 0.0005	0.0005	mg/L							
Barium, total	< 0.005	0.005	mg/L							
Beryllium, total	< 0.0001	0.0001	mg/L							
Bismuth, total	< 0.0001	0.0001	mg/L							
Boron, total	< 0.004	0.004	mg/L							
Cadmium, total	< 0.00001	0.00001	mg/L							
Calcium, total	< 0.2	0.2	mg/L							
Chromium, total	< 0.0005	0.0005	mg/L							
Cobalt, total	< 0.00005	0.00005	mg/L							
Copper, total	< 0.0002	0.0002	mg/L							
Iron, total	< 0.01	0.01	mg/L							
Lead, total	< 0.0001	0.0001	mg/L							
Lithium, total	< 0.0001	0.0001	mg/L							
Magnesium, total	< 0.01	0.01	mg/L							
Manganese, total	< 0.0002	0.0002	mg/L							
Mercury, total	< 0.00002	0.00002	mg/L							
Molybdenum, total	< 0.0001	0.0001	mg/L							
Nickel, total	< 0.0002	0.0002	mg/L							
Phosphorus, total	< 0.05	0.05	mg/L							
Potassium, total	< 0.02	0.02	mg/L							
Selenium, total	< 0.0005	0.0005	mg/L							
Silicon, total	< 0.5	0.5	mg/L							
Silver, total	< 0.00005	0.00005	mg/L							

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040370
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-07

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Total Metals, Batch B7D0379, Continued										
Blank (B7D0379-BLK1), Continued				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Sodium, total	< 0.02	0.02	mg/L							
Strontium, total	< 0.001	0.001	mg/L							
Sulfur, total	< 1	1	mg/L							
Tellurium, total	< 0.0002	0.0002	mg/L							
Thallium, total	< 0.00002	0.00002	mg/L							
Thorium, total	< 0.0001	0.0001	mg/L							
Tin, total	< 0.0002	0.0002	mg/L							
Titanium, total	< 0.005	0.005	mg/L							
Uranium, total	< 0.00002	0.00002	mg/L							
Vanadium, total	< 0.001	0.001	mg/L							
Zinc, total	< 0.004	0.004	mg/L							
Zirconium, total	< 0.0001	0.0001	mg/L							
Reference (B7D0379-SRM1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Aluminum, total	0.290	0.005	mg/L	0.303		96	81-129			
Antimony, total	0.0511	0.0001	mg/L	0.0511		100	88-114			
Arsenic, total	0.114	0.0005	mg/L	0.118		96	88-114			
Barium, total	0.781	0.005	mg/L	0.823		95	72-104			
Beryllium, total	0.0466	0.0001	mg/L	0.0496		94	76-131			
Boron, total	3.25	0.004	mg/L	3.45		94	75-121			
Cadmium, total	0.0490	0.00001	mg/L	0.0495		99	89-111			
Calcium, total	11.3	0.2	mg/L	11.6		97	86-121			
Chromium, total	0.253	0.0005	mg/L	0.250		101	89-114			
Cobalt, total	0.0402	0.00005	mg/L	0.0377		107	91-113			
Copper, total	0.517	0.0002	mg/L	0.486		106	91-115			
Iron, total	0.51	0.01	mg/L	0.488		104	77-124			
Lead, total	0.211	0.0001	mg/L	0.204		103	92-113			
Lithium, total	0.369	0.0001	mg/L	0.403		92	85-115			
Magnesium, total	3.86	0.01	mg/L	3.79		102	78-120			
Manganese, total	0.107	0.0002	mg/L	0.109		98	90-114			
Mercury, total	0.00525	0.00002	mg/L	0.00489		107	50-150			
Molybdenum, total	0.198	0.0001	mg/L	0.198		100	90-111			
Nickel, total	0.261	0.0002	mg/L	0.249		105	90-111			
Phosphorus, total	0.20	0.05	mg/L	0.227		87	85-115			
Potassium, total	7.13	0.02	mg/L	7.21		99	84-113			
Selenium, total	0.129	0.0005	mg/L	0.121		107	85-115			
Sodium, total	7.75	0.02	mg/L	7.54		103	82-123			
Strontium, total	0.360	0.001	mg/L	0.375		96	88-112			
Thallium, total	0.0843	0.00002	mg/L	0.0805		105	91-114			
Uranium, total	0.0314	0.00002	mg/L	0.0306		102	85-120			
Vanadium, total	0.381	0.001	mg/L	0.386		99	86-111			
Zinc, total	2.42	0.004	mg/L	2.49		97	85-111			
Volatile Organic Compounds (VOC), Batch B7D0316										
Blank (B7D0316-BLK1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Benzene	< 0.5	0.5	µg/L							
Bromodichloromethane	< 1.0	1.0	µg/L							
Bromoform	< 1.0	1.0	µg/L							
Carbon tetrachloride	< 0.5	0.5	µg/L							
Chlorobenzene	< 1.0	1.0	µg/L							
Chloroethane	< 2.0	2.0	µg/L							
Chloroform	< 1.0	1.0	µg/L							
Dibromochloromethane	< 1.0	1.0	µg/L							
1,2-Dibromoethane	< 0.2	0.2	µg/L							
Dibromomethane	< 1.0	1.0	µg/L							

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040370
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-07

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Volatile Organic Compounds (VOC), Batch B7D0316, Continued										
Blank (B7D0316-BLK1), Continued				Prepared: 2017-04-07, Analyzed: 2017-04-07						
1,2-Dichlorobenzene	< 0.5	0.5	µg/L							
1,3-Dichlorobenzene	< 1.0	1.0	µg/L							
1,4-Dichlorobenzene	< 1.0	1.0	µg/L							
1,1-Dichloroethane	< 1.0	1.0	µg/L							
1,2-Dichloroethane	< 1.0	1.0	µg/L							
1,1-Dichloroethylene	< 1.0	1.0	µg/L							
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
1,2-Dichloropropane	< 1.0	1.0	µg/L							
1,3-Dichloropropene	< 1.0	1.0	µg/L							
Ethylbenzene	< 1.0	1.0	µg/L							
Methyl tert-butyl ether	< 1.0	1.0	µg/L							
Dichloromethane	< 3.0	3.0	µg/L							
Styrene	< 1.0	1.0	µg/L							
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L							
Tetrachloroethylene	< 1.0	1.0	µg/L							
Toluene	< 1.0	1.0	µg/L							
1,1,1-Trichloroethane	< 1.0	1.0	µg/L							
1,1,2-Trichloroethane	< 1.0	1.0	µg/L							
Trichloroethylene	< 1.0	1.0	µg/L							
Trichlorofluoromethane	< 1.0	1.0	µg/L							
Vinyl chloride	< 1.0	1.0	µg/L							
Xylenes (total)	< 2.0	2.0	µg/L							
Surrogate: Toluene-d8	*24.0*		*µg/L*	25.0		*96*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*21.8*		*µg/L*	25.0		*87*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*20.2*		*µg/L*	25.0		*81*	*70-130*			
LCS (B7D0316-BS1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Benzene	20.4	0.5	µg/L	20.0		102	70-130			
Bromodichloromethane	18.0	1.0	µg/L	20.0		90	70-130			
Bromoform	16.6	1.0	µg/L	20.0		83	70-130			
Carbon tetrachloride	17.7	0.5	µg/L	20.0		88	70-130			
Chlorobenzene	19.3	1.0	µg/L	20.0		97	70-130			
Chloroethane	19.6	2.0	µg/L	20.0		98	70-130			
Chloroform	19.1	1.0	µg/L	20.0		96	70-130			
Dibromochloromethane	17.1	1.0	µg/L	20.0		85	70-130			
1,2-Dibromoethane	17.0	0.2	µg/L	20.0		85	70-130			
Dibromomethane	18.3	1.0	µg/L	20.0		91	70-130			
1,2-Dichlorobenzene	20.6	0.5	µg/L	20.0		103	70-130			
1,3-Dichlorobenzene	19.8	1.0	µg/L	20.0		99	70-130			
1,4-Dichlorobenzene	19.4	1.0	µg/L	20.0		97	70-130			
1,1-Dichloroethane	18.4	1.0	µg/L	20.0		92	70-130			
1,2-Dichloroethane	18.0	1.0	µg/L	20.0		90	70-130			
1,1-Dichloroethylene	17.7	1.0	µg/L	20.0		88	70-130			
cis-1,2-Dichloroethylene	19.6	1.0	µg/L	20.0		98	70-130			
trans-1,2-Dichloroethylene	18.6	1.0	µg/L	20.0		93	70-130			
1,2-Dichloropropane	19.6	1.0	µg/L	20.0		98	70-130			
1,3-Dichloropropene	32.0	1.0	µg/L	40.0		80	70-130			
Ethylbenzene	19.6	1.0	µg/L	20.0		98	70-130			
Methyl tert-butyl ether	17.1	1.0	µg/L	20.0		86	70-130			
Dichloromethane	18.8	3.0	µg/L	20.0		94	70-130			
Styrene	19.6	1.0	µg/L	20.0		98	70-130			
1,1,2,2-Tetrachloroethane	18.4	0.5	µg/L	20.0		92	70-130			
Tetrachloroethylene	18.0	1.0	µg/L	20.0		90	70-130			
Toluene	19.4	1.0	µg/L	20.0		97	70-130			
1,1,1-Trichloroethane	18.2	1.0	µg/L	20.0		91	70-130			

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040370
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-07

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Volatile Organic Compounds (VOC), Batch B7D0316, Continued										
LCS (B7D0316-BS1), Continued				Prepared: 2017-04-07, Analyzed: 2017-04-07						
1,1,2-Trichloroethane	18.9	1.0	µg/L	20.0		94	70-130			
Trichloroethylene	19.8	1.0	µg/L	20.0		99	70-130			
Trichlorofluoromethane	19.5	1.0	µg/L	20.0		98	70-130			
Vinyl chloride	19.4	1.0	µg/L	20.0		97	70-130			
Xylenes (total)	58.1	2.0	µg/L	60.0		97	70-130			
Surrogate: Toluene-d8	*27.7*		*µg/L*	25.0		*111*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*22.8*		*µg/L*	25.0		*91*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*27.2*		*µg/L*	25.0		*109*	*70-130*			

QC Qualifiers:

HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
RA4	This in an estimated value. The result was over the calibration range, and further dilution was not possible.

CERTIFICATE OF ANALYSIS

REPORTED TO	Western Water Associates Ltd 106 - 5145 26th Street Vernon, BC V1T 8G4	**TEL** **FAX**	(250) 541-1030 (250) 575-4764
ATTENTION	Bryer Manwell	**WORK ORDER**	7040434
PO NUMBER		**RECEIVED / TEMP**	2017-04-06 07:30 / 2°C
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13
PROJECT INFO	14-024-16	**COC NUMBER**	B47344

General Comments:

CARO Analytical Services employs methods which are conducted according to procedures accepted by appropriate regulatory agencies, and/or are conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, except where otherwise agreed to by the client.

The results in this report apply to the samples analyzed in accordance with the Chain of Custody or Sample Requisition document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Authorized By: **Sara Gulenchyn, B.Sc, P.Chem.**
Client Service Coordinator

If you have any questions or concerns, please contact me at sgulenchyn@caro.ca

TABLE OF CONTENTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

ANALYSIS INFORMATION

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analysis Description	Method Reference	Technique	Location
Alkalinity in Water	APHA 2320 B*	Titration with H2SO4	Kelowna
Ammonia, Total in Water	APHA 4500-NH3 G*	Automated Colorimetry (Phenate)	Kelowna
Anions by IC in Water	APHA 4110 B	Ion Chromatography with Chemical Suppression of Eluent Conductivity	Kelowna
Conductivity in Water	APHA 2510 B	Conductivity Meter	Kelowna
Dissolved Metals by ICPMS in Water	APHA 3030 B / APHA 3125 B	0.45 µm Filtration / Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	Richmond
Hardness (as CaCO3) in Water	APHA 2340 B	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	N/A
Mercury, dissolved by CVAFS in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Mercury, total by CVAFS in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
pH in Water	APHA 4500-H+ B	Electrometry	Kelowna
Solids, Total Suspended in Water	APHA 2540 D*	Gravimetry (Dried at 103-105C)	Kelowna
Total Metals by ICPMS in Water	APHA 3030 E* / APHA 3125 B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	Richmond
Turbidity in Water	APHA 2130 B	Nephelometry	Kelowna
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260B	Purge&Trap / GC-MS (SIM)	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Method Reference Descriptions:

APHA	Standard Methods for the Examination of Water and Wastewater, 22nd Edition, American Public Health Association/American Water Works Association/Water Environment Federation
EPA	United States Environmental Protection Agency Test Methods

Glossary of Terms:

MRL	Method Reporting Limit
<	Less than the Reported Detection Limit (RDL) - the RDL may be higher than the MRL due to various factors such as dilutions, limited sample volume, high moisture, or interferences
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
pH units	pH < 7 = acidic, ph > 7 = basic
µg/L	Micrograms per litre
µS/cm	Microsiemens per centimetre

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Runoff 1 (7040434-01) [Water] Sampled: 2017-04-05 00:00						
Anions						
Bromide	**1.82**	0.10	mg/L	N/A	2017-04-10	
Chloride	**708**	0.10	mg/L	N/A	2017-04-10	
Fluoride	< 1.00	0.10	mg/L	N/A	2017-04-10	
Nitrate (as N)	**2.78**	0.010	mg/L	N/A	2017-04-07	
Nitrite (as N)	< 0.100	0.010	mg/L	N/A	2017-04-07	
Sulfate	**153**	1.0	mg/L	N/A	2017-04-10	
General Parameters						
Alkalinity, Total (as CaCO3)	**3050**	2.0	mg/L	N/A	2017-04-11	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-11	
Alkalinity, Bicarbonate (as CaCO3)	**3050**	2.0	mg/L	N/A	2017-04-11	
Alkalinity, Carbonate (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-11	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-11	
Bicarbonate (HCO3)	**3720**	1.22	mg/L	N/A	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	N/A	
Conductivity (EC)	**8440**	2.0	µS/cm	N/A	2017-04-10	
Sample ID: Runoff 2 (7040434-02) [Water] Sampled: 2017-04-05 00:00						
Anions						
Bromide	< 10.0	0.10	mg/L	N/A	2017-04-10	
Chloride	**1230**	0.10	mg/L	N/A	2017-04-10	
Fluoride	< 1.00	0.10	mg/L	N/A	2017-04-10	
Nitrate (as N)	< 0.100	0.010	mg/L	N/A	2017-04-07	
Nitrite (as N)	< 0.100	0.010	mg/L	N/A	2017-04-07	
Sulfate	**32.7**	1.0	mg/L	N/A	2017-04-10	
General Parameters						
Alkalinity, Total (as CaCO3)	**9700**	2.0	mg/L	N/A	2017-04-11	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-11	
Alkalinity, Bicarbonate (as CaCO3)	**9700**	2.0	mg/L	N/A	2017-04-11	
Alkalinity, Carbonate (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-11	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-11	
Bicarbonate (HCO3)	**11800**	1.22	mg/L	N/A	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	N/A	
Ammonia, Total (as N)	**928**	0.020	mg/L	N/A	2017-04-09	
Conductivity (EC)	**13800**	2.0	µS/cm	N/A	2017-04-10	
pH	**7.70**	0.01	pH units	N/A	2017-04-10	HT2
Solids, Total Suspended	**307**	2	mg/L	N/A	2017-04-11	
Turbidity	**212**	0.10	NTU	N/A	2017-04-07	
Calculated Parameters						
Hardness, Total (as CaCO3)	**2090**	0.500	mg/L	N/A	N/A	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Runoff 2 (7040434-02) [Water] Sampled: 2017-04-05 00:00, Continued						
Total Metals						
Aluminum, total	**2.17**	0.005	mg/L	2017-04-07	2017-04-08	
Antimony, total	**0.0063**	0.0001	mg/L	2017-04-07	2017-04-08	
Arsenic, total	**0.0524**	0.0005	mg/L	2017-04-07	2017-04-08	
Barium, total	**0.259**	0.005	mg/L	2017-04-07	2017-04-08	
Beryllium, total	**0.0001**	0.0001	mg/L	2017-04-07	2017-04-08	
Bismuth, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Boron, total	**4.90**	0.004	mg/L	2017-04-07	2017-04-08	
Cadmium, total	**0.00048**	0.00001	mg/L	2017-04-07	2017-04-08	
Calcium, total	**382**	0.2	mg/L	2017-04-07	2017-04-08	
Chromium, total	**0.126**	0.0005	mg/L	2017-04-07	2017-04-08	
Cobalt, total	**0.0371**	0.00005	mg/L	2017-04-07	2017-04-08	
Copper, total	**0.0227**	0.0002	mg/L	2017-04-07	2017-04-08	
Iron, total	**46.0**	0.01	mg/L	2017-04-07	2017-04-08	
Lead, total	**0.0119**	0.0001	mg/L	2017-04-07	2017-04-08	
Lithium, total	**0.238**	0.0001	mg/L	2017-04-07	2017-04-08	
Magnesium, total	**276**	0.01	mg/L	2017-04-07	2017-04-08	
Manganese, total	**1.41**	0.0002	mg/L	2017-04-07	2017-04-08	
Mercury, total	**0.00004**	0.00002	mg/L	2017-04-11	2017-04-12	
Molybdenum, total	**0.0061**	0.0001	mg/L	2017-04-07	2017-04-08	
Nickel, total	**0.190**	0.0002	mg/L	2017-04-07	2017-04-08	
Phosphorus, total	**13.1**	0.05	mg/L	2017-04-07	2017-04-08	
Potassium, total	**852**	0.02	mg/L	2017-04-07	2017-04-08	
Selenium, total	**0.0007**	0.0005	mg/L	2017-04-07	2017-04-08	
Silicon, total	**29.8**	0.5	mg/L	2017-04-07	2017-04-08	
Silver, total	**0.00015**	0.00005	mg/L	2017-04-07	2017-04-08	
Sodium, total	**1460**	0.02	mg/L	2017-04-07	2017-04-08	
Strontium, total	**2.40**	0.001	mg/L	2017-04-07	2017-04-08	
Sulfur, total	**31**	3	mg/L	2017-04-07	2017-04-08	
Tellurium, total	< 0.0002	0.0002	mg/L	2017-04-07	2017-04-08	
Thallium, total	< 0.00002	0.00002	mg/L	2017-04-07	2017-04-08	
Thorium, total	**0.0004**	0.0001	mg/L	2017-04-07	2017-04-08	
Tin, total	**0.0093**	0.0002	mg/L	2017-04-07	2017-04-08	
Titanium, total	**0.069**	0.005	mg/L	2017-04-07	2017-04-08	
Uranium, total	**0.00069**	0.00002	mg/L	2017-04-07	2017-04-08	
Vanadium, total	**0.011**	0.001	mg/L	2017-04-07	2017-04-08	
Zinc, total	**0.576**	0.004	mg/L	2017-04-07	2017-04-08	
Zirconium, total	**0.0071**	0.0001	mg/L	2017-04-07	2017-04-08	
Volatile Organic Compounds (VOC)						
Benzene	**1.1**	0.5	µg/L	N/A	2017-04-12	
Bromodichloromethane	< 1.0	1.0	µg/L	N/A	2017-04-12	
Bromoform	< 1.0	1.0	µg/L	N/A	2017-04-12	
Carbon tetrachloride	< 0.5	0.5	µg/L	N/A	2017-04-12	
Chlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-12	
Chloroethane	< 2.0	2.0	µg/L	N/A	2017-04-12	
Chloroform	< 1.0	1.0	µg/L	N/A	2017-04-12	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Runoff 2 (7040434-02) [Water] Sampled: 2017-04-05 00:00, Continued						
Volatile Organic Compounds (VOC), Continued						
Dibromochloromethane	< 1.0	1.0	µg/L	N/A	2017-04-12	
1,2-Dibromoethane	< 0.2	0.2	µg/L	N/A	2017-04-12	
Dibromomethane	< 1.0	1.0	µg/L	N/A	2017-04-12	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	N/A	2017-04-12	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-12	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-12	
1,1-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-12	
1,2-Dichloroethane	**1.9**	1.0	µg/L	N/A	2017-04-12	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-12	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-12	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-12	
1,2-Dichloropropane	< 1.0	1.0	µg/L	N/A	2017-04-12	
1,3-Dichloropropene	< 1.0	1.0	µg/L	N/A	2017-04-12	
Ethylbenzene	**2.8**	1.0	µg/L	N/A	2017-04-12	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	N/A	2017-04-12	
Dichloromethane	< 3.0	3.0	µg/L	N/A	2017-04-12	
Styrene	< 1.0	1.0	µg/L	N/A	2017-04-12	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	N/A	2017-04-12	
Tetrachloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-12	
Toluene	**104**	1.0	µg/L	N/A	2017-04-12	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-12	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-12	
Trichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-12	
Trichlorofluoromethane	< 1.0	1.0	µg/L	N/A	2017-04-12	
Vinyl chloride	< 1.0	1.0	µg/L	N/A	2017-04-12	
Xylenes (total)	**6.7**	2.0	µg/L	N/A	2017-04-12	
Surrogate: Toluene-d8	*85*	*70-130*	%	*N/A*	*2017-04-12*	
Surrogate: 4-Bromofluorobenzene	*108*	*70-130*	%	*N/A*	*2017-04-12*	
Surrogate: 1,4-Dichlorobenzene-d4	*111*	*70-130*	%	*N/A*	*2017-04-12*	
Sample ID: MW6-S (7040434-03) [Waste Water] Sampled: 2017-04-05 00:00						
Anions						
Bromide	**0.88**	0.10	mg/L	N/A	2017-04-08	
Chloride	**470**	0.10	mg/L	N/A	2017-04-08	
Fluoride	**0.14**	0.10	mg/L	N/A	2017-04-08	
Nitrate (as N)	**42.3**	0.010	mg/L	N/A	2017-04-08	
Nitrite (as N)	**5.70**	0.010	mg/L	N/A	2017-04-08	
Sulfate	**799**	1.0	mg/L	N/A	2017-04-08	
General Parameters						
Alkalinity, Total (as CaCO3)	**902**	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Bicarbonate (as CaCO3)	**902**	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Carbonate (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: MW6-S (7040434-03) [Waste Water] Sampled: 2017-04-05 00:00, Continued						
General Parameters, Continued						
Alkalinity, Hydroxide (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Bicarbonate (HCO3)	**1100**	1.22	mg/L	N/A	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	N/A	
Ammonia, Total (as N)	**1.19**	0.020	mg/L	N/A	2017-04-09	
Conductivity (EC)	**4350**	2.0	µS/cm	N/A	2017-04-09	
pH	**7.42**	0.01	pH units	N/A	2017-04-09	HT2
Solids, Total Suspended	**5**	2	mg/L	N/A	2017-04-11	
Turbidity	**1.03**	0.10	NTU	N/A	2017-04-07	
Calculated Parameters						
Hardness, Total (as CaCO3)	**1650**	5.00	mg/L	N/A	N/A	
Dissolved Metals						
Aluminum, dissolved	**0.006**	0.005	mg/L	N/A	2017-04-08	
Antimony, dissolved	**0.0001**	0.0001	mg/L	N/A	2017-04-08	
Arsenic, dissolved	**0.0007**	0.0005	mg/L	N/A	2017-04-08	
Barium, dissolved	**0.057**	0.005	mg/L	N/A	2017-04-08	
Beryllium, dissolved	< 0.0001	0.0001	mg/L	N/A	2017-04-08	
Bismuth, dissolved	< 0.0001	0.0001	mg/L	N/A	2017-04-08	
Boron, dissolved	**2.03**	0.004	mg/L	N/A	2017-04-08	
Cadmium, dissolved	< 0.00001	0.00001	mg/L	N/A	2017-04-08	
Calcium, dissolved	**163**	0.2	mg/L	N/A	2017-04-10	
Chromium, dissolved	**0.0006**	0.0005	mg/L	N/A	2017-04-08	
Cobalt, dissolved	**0.00164**	0.00005	mg/L	N/A	2017-04-08	
Copper, dissolved	**0.0028**	0.0002	mg/L	N/A	2017-04-08	
Iron, dissolved	< 0.010	0.010	mg/L	N/A	2017-04-08	
Lead, dissolved	< 0.0001	0.0001	mg/L	N/A	2017-04-08	
Lithium, dissolved	**0.0484**	0.0001	mg/L	N/A	2017-04-08	
Magnesium, dissolved	**302**	0.01	mg/L	N/A	2017-04-08	
Manganese, dissolved	**0.0597**	0.0002	mg/L	N/A	2017-04-08	
Mercury, dissolved	< 0.00002	0.00002	mg/L	2017-04-10	2017-04-11	
Molybdenum, dissolved	**0.0003**	0.0001	mg/L	N/A	2017-04-08	
Nickel, dissolved	**0.0110**	0.0002	mg/L	N/A	2017-04-08	
Phosphorus, dissolved	< 0.05	0.05	mg/L	N/A	2017-04-08	
Potassium, dissolved	**209**	0.02	mg/L	N/A	2017-04-08	
Selenium, dissolved	< 0.0005	0.0005	mg/L	N/A	2017-04-08	
Silicon, dissolved	**12.6**	0.5	mg/L	N/A	2017-04-08	
Silver, dissolved	< 0.00005	0.00005	mg/L	N/A	2017-04-08	
Sodium, dissolved	**343**	0.02	mg/L	N/A	2017-04-08	
Strontium, dissolved	**1.74**	0.001	mg/L	N/A	2017-04-08	
Sulfur, dissolved	**284**	3	mg/L	N/A	2017-04-08	
Tellurium, dissolved	< 0.0002	0.0002	mg/L	N/A	2017-04-08	
Thallium, dissolved	**0.00006**	0.00002	mg/L	N/A	2017-04-08	
Thorium, dissolved	< 0.0001	0.0001	mg/L	N/A	2017-04-08	
Tin, dissolved	< 0.0002	0.0002	mg/L	N/A	2017-04-08	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: MW6-S (7040434-03) [Waste Water] Sampled: 2017-04-05 00:00, Continued						
Dissolved Metals, Continued						
Titanium, dissolved	< 0.005	0.005	mg/L	N/A	2017-04-08	
Uranium, dissolved	**0.00734**	0.00002	mg/L	N/A	2017-04-08	
Vanadium, dissolved	< 0.001	0.001	mg/L	N/A	2017-04-08	
Zinc, dissolved	**0.005**	0.004	mg/L	N/A	2017-04-08	
Zirconium, dissolved	**0.0002**	0.0001	mg/L	N/A	2017-04-08	
Volatile Organic Compounds (VOC)						
Benzene	< 0.5	0.5	µg/L	N/A	2017-04-11	
Bromodichloromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Bromoform	< 1.0	1.0	µg/L	N/A	2017-04-11	
Carbon tetrachloride	< 0.5	0.5	µg/L	N/A	2017-04-11	
Chlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Chloroethane	< 2.0	2.0	µg/L	N/A	2017-04-11	
Chloroform	< 1.0	1.0	µg/L	N/A	2017-04-11	
Dibromochloromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dibromoethane	< 0.2	0.2	µg/L	N/A	2017-04-11	
Dibromomethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	N/A	2017-04-11	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichloropropane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,3-Dichloropropene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Ethylbenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	N/A	2017-04-11	
Dichloromethane	< 3.0	3.0	µg/L	N/A	2017-04-11	
Styrene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	N/A	2017-04-11	
Tetrachloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Toluene	**6.6**	1.0	µg/L	N/A	2017-04-11	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Trichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Trichlorofluoromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Vinyl chloride	< 1.0	1.0	µg/L	N/A	2017-04-11	
Xylenes (total)	< 2.0	2.0	µg/L	N/A	2017-04-11	
Surrogate: Toluene-d8	*81*	*70-130*	%	*N/A*	*2017-04-11*	
Surrogate: 4-Bromofluorobenzene	*99*	*70-130*	%	*N/A*	*2017-04-11*	
Surrogate: 1,4-Dichlorobenzene-d4	*77*	*70-130*	%	*N/A*	*2017-04-11*	
Sample ID: Town Well #4 (7040434-04) [Waste Water] Sampled: 2017-04-05 00:00						

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Town Well #4 (7040434-04) [Waste Water] Sampled: 2017-04-05 00:00, Continued						
Anions						
Bromide	< 0.10	0.10	mg/L	N/A	2017-04-08	
Chloride	**90.4**	0.10	mg/L	N/A	2017-04-08	
Fluoride	< 0.10	0.10	mg/L	N/A	2017-04-08	
Nitrate (as N)	**1.39**	0.010	mg/L	N/A	2017-04-08	
Nitrite (as N)	< 0.010	0.010	mg/L	N/A	2017-04-08	
Phosphate (as P)	< 0.010	0.010	mg/L	N/A	2017-04-08	
Sulfate	**42.8**	1.0	mg/L	N/A	2017-04-08	
General Parameters						
Alkalinity, Total (as CaCO3)	**343**	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Bicarbonate (as CaCO3)	**343**	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Carbonate (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Bicarbonate (HCO3)	**418**	1.22	mg/L	N/A	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	N/A	
Ammonia, Total (as N)	**0.026**	0.020	mg/L	N/A	2017-04-09	
Conductivity (EC)	**959**	2.0	µS/cm	N/A	2017-04-09	
pH	**7.85**	0.01	pH units	N/A	2017-04-09	HT2
Solids, Total Suspended	< 2	2	mg/L	N/A	2017-04-11	
Turbidity	< 0.10	0.10	NTU	N/A	2017-04-07	
Calculated Parameters						
Hardness, Total (as CaCO3)	**398**	0.500	mg/L	N/A	N/A	
Total Metals						
Aluminum, total	< 0.005	0.005	mg/L	2017-04-07	2017-04-08	
Antimony, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Arsenic, total	< 0.0005	0.0005	mg/L	2017-04-07	2017-04-08	
Barium, total	**0.214**	0.005	mg/L	2017-04-07	2017-04-08	
Beryllium, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Bismuth, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Boron, total	**0.025**	0.004	mg/L	2017-04-07	2017-04-08	
Cadmium, total	< 0.00001	0.00001	mg/L	2017-04-07	2017-04-08	
Calcium, total	**93.7**	0.2	mg/L	2017-04-07	2017-04-08	
Chromium, total	**0.0005**	0.0005	mg/L	2017-04-07	2017-04-08	
Cobalt, total	< 0.00005	0.00005	mg/L	2017-04-07	2017-04-08	
Copper, total	**0.0015**	0.0002	mg/L	2017-04-07	2017-04-08	
Iron, total	< 0.01	0.01	mg/L	2017-04-07	2017-04-08	
Lead, total	**0.0001**	0.0001	mg/L	2017-04-07	2017-04-08	
Lithium, total	**0.0020**	0.0001	mg/L	2017-04-07	2017-04-08	
Magnesium, total	**39.6**	0.01	mg/L	2017-04-07	2017-04-08	
Manganese, total	< 0.0002	0.0002	mg/L	2017-04-07	2017-04-08	
Mercury, total	< 0.00002	0.00002	mg/L	2017-04-11	2017-04-12	
Molybdenum, total	**0.0002**	0.0001	mg/L	2017-04-07	2017-04-08	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Town Well #4 (7040434-04) [Waste Water] Sampled: 2017-04-05 00:00, Continued						
Total Metals, Continued						
Nickel, total	< 0.0002	0.0002	mg/L	2017-04-07	2017-04-08	
Phosphorus, total	< 0.05	0.05	mg/L	2017-04-07	2017-04-08	
Potassium, total	**1.85**	0.02	mg/L	2017-04-07	2017-04-08	
Selenium, total	< 0.0005	0.0005	mg/L	2017-04-07	2017-04-08	
Silicon, total	**4.7**	0.5	mg/L	2017-04-07	2017-04-08	
Silver, total	< 0.00005	0.00005	mg/L	2017-04-07	2017-04-08	
Sodium, total	**52.7**	0.02	mg/L	2017-04-07	2017-04-08	
Strontium, total	**0.446**	0.001	mg/L	2017-04-07	2017-04-08	
Sulfur, total	**12**	3	mg/L	2017-04-07	2017-04-08	
Tellurium, total	< 0.0002	0.0002	mg/L	2017-04-07	2017-04-08	
Thallium, total	< 0.00002	0.00002	mg/L	2017-04-07	2017-04-08	
Thorium, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Tin, total	< 0.0002	0.0002	mg/L	2017-04-07	2017-04-08	
Titanium, total	< 0.005	0.005	mg/L	2017-04-07	2017-04-08	
Uranium, total	**0.00124**	0.00002	mg/L	2017-04-07	2017-04-08	
Vanadium, total	< 0.001	0.001	mg/L	2017-04-07	2017-04-08	
Zinc, total	< 0.004	0.004	mg/L	2017-04-07	2017-04-08	
Zirconium, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Volatile Organic Compounds (VOC)						
Benzene	< 0.5	0.5	µg/L	N/A	2017-04-11	
Bromodichloromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Bromoform	< 1.0	1.0	µg/L	N/A	2017-04-11	
Carbon tetrachloride	< 0.5	0.5	µg/L	N/A	2017-04-11	
Chlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Chloroethane	< 2.0	2.0	µg/L	N/A	2017-04-11	
Chloroform	< 1.0	1.0	µg/L	N/A	2017-04-11	
Dibromochloromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dibromoethane	< 0.2	0.2	µg/L	N/A	2017-04-11	
Dibromomethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	N/A	2017-04-11	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichloropropane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,3-Dichloropropene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Ethylbenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	N/A	2017-04-11	
Dichloromethane	< 3.0	3.0	µg/L	N/A	2017-04-11	
Styrene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	N/A	2017-04-11	
Tetrachloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Town Well #4 (7040434-04) [Waste Water] Sampled: 2017-04-05 00:00, Continued						
Volatile Organic Compounds (VOC), Continued						
Toluene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Trichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Trichlorofluoromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Vinyl chloride	< 1.0	1.0	µg/L	N/A	2017-04-11	
Xylenes (total)	< 2.0	2.0	µg/L	N/A	2017-04-11	
Surrogate: Toluene-d8	*81*	*70-130*	%	*N/A*	*2017-04-11*	
Surrogate: 4-Bromofluorobenzene	*102*	*70-130*	%	*N/A*	*2017-04-11*	
Surrogate: 1,4-Dichlorobenzene-d4	*78*	*70-130*	%	*N/A*	*2017-04-11*	
Sample ID: Town Well #6 (7040434-05) [Waste Water] Sampled: 2017-04-05 00:00						
Anions						
Bromide	< 0.10	0.10	mg/L	N/A	2017-04-08	
Chloride	**31.0**	0.10	mg/L	N/A	2017-04-08	
Fluoride	< 0.10	0.10	mg/L	N/A	2017-04-08	
Nitrate (as N)	**1.09**	0.010	mg/L	N/A	2017-04-08	
Nitrite (as N)	< 0.010	0.010	mg/L	N/A	2017-04-08	
Sulfate	**27.6**	1.0	mg/L	N/A	2017-04-08	
General Parameters						
Alkalinity, Total (as CaCO3)	**314**	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Bicarbonate (as CaCO3)	**314**	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Carbonate (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Bicarbonate (HCO3)	**383**	1.22	mg/L	N/A	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	N/A	
Ammonia, Total (as N)	**0.030**	0.020	mg/L	N/A	2017-04-09	
Conductivity (EC)	**692**	2.0	µS/cm	N/A	2017-04-09	
pH	**7.89**	0.01	pH units	N/A	2017-04-09	HT2
Solids, Total Suspended	< 2	2	mg/L	N/A	2017-04-11	
Turbidity	**0.16**	0.10	NTU	N/A	2017-04-07	
Calculated Parameters						
Hardness, Total (as CaCO3)	**334**	0.500	mg/L	N/A	N/A	
Total Metals						
Aluminum, total	< 0.005	0.005	mg/L	2017-04-07	2017-04-08	
Antimony, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Arsenic, total	< 0.0005	0.0005	mg/L	2017-04-07	2017-04-08	
Barium, total	**0.150**	0.005	mg/L	2017-04-07	2017-04-08	
Beryllium, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Bismuth, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Town Well #6 (7040434-05) [Waste Water] Sampled: 2017-04-05 00:00, Continued						
Total Metals, Continued						
Boron, total	**0.016**	0.004	mg/L	2017-04-07	2017-04-08	
Cadmium, total	< 0.00001	0.00001	mg/L	2017-04-07	2017-04-08	
Calcium, total	**89.6**	0.2	mg/L	2017-04-07	2017-04-08	
Chromium, total	**0.0006**	0.0005	mg/L	2017-04-07	2017-04-08	
Cobalt, total	< 0.00005	0.00005	mg/L	2017-04-07	2017-04-08	
Copper, total	**0.0013**	0.0002	mg/L	2017-04-07	2017-04-08	
Iron, total	< 0.01	0.01	mg/L	2017-04-07	2017-04-08	
Lead, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Lithium, total	**0.0013**	0.0001	mg/L	2017-04-07	2017-04-08	
Magnesium, total	**26.8**	0.01	mg/L	2017-04-07	2017-04-08	
Manganese, total	**0.0007**	0.0002	mg/L	2017-04-07	2017-04-08	
Mercury, total	< 0.00002	0.00002	mg/L	2017-04-11	2017-04-12	
Molybdenum, total	**0.0003**	0.0001	mg/L	2017-04-07	2017-04-08	
Nickel, total	**0.0002**	0.0002	mg/L	2017-04-07	2017-04-08	
Phosphorus, total	< 0.05	0.05	mg/L	2017-04-07	2017-04-08	
Potassium, total	**0.93**	0.02	mg/L	2017-04-07	2017-04-08	
Selenium, total	< 0.0005	0.0005	mg/L	2017-04-07	2017-04-08	
Silicon, total	**4.3**	0.5	mg/L	2017-04-07	2017-04-08	
Silver, total	< 0.00005	0.00005	mg/L	2017-04-07	2017-04-08	
Sodium, total	**17.1**	0.02	mg/L	2017-04-07	2017-04-08	
Strontium, total	**0.294**	0.001	mg/L	2017-04-07	2017-04-08	
Sulfur, total	**6**	3	mg/L	2017-04-07	2017-04-08	
Tellurium, total	< 0.0002	0.0002	mg/L	2017-04-07	2017-04-08	
Thallium, total	< 0.00002	0.00002	mg/L	2017-04-07	2017-04-08	
Thorium, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Tin, total	< 0.0002	0.0002	mg/L	2017-04-07	2017-04-08	
Titanium, total	< 0.005	0.005	mg/L	2017-04-07	2017-04-08	
Uranium, total	**0.00109**	0.00002	mg/L	2017-04-07	2017-04-08	
Vanadium, total	< 0.001	0.001	mg/L	2017-04-07	2017-04-08	
Zinc, total	**0.004**	0.004	mg/L	2017-04-07	2017-04-08	
Zirconium, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Volatile Organic Compounds (VOC)						
Benzene	< 0.5	0.5	µg/L	N/A	2017-04-11	
Bromodichloromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Bromoform	< 1.0	1.0	µg/L	N/A	2017-04-11	
Carbon tetrachloride	< 0.5	0.5	µg/L	N/A	2017-04-11	
Chlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Chloroethane	< 2.0	2.0	µg/L	N/A	2017-04-11	
Chloroform	< 1.0	1.0	µg/L	N/A	2017-04-11	
Dibromochloromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dibromoethane	< 0.2	0.2	µg/L	N/A	2017-04-11	
Dibromomethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	N/A	2017-04-11	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: Town Well #6 (7040434-05) [Waste Water] Sampled: 2017-04-05 00:00, Continued						
Volatile Organic Compounds (VOC), Continued						
1,1-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichloropropane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,3-Dichloropropene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Ethylbenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	N/A	2017-04-11	
Dichloromethane	< 3.0	3.0	µg/L	N/A	2017-04-11	
Styrene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	N/A	2017-04-11	
Tetrachloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Toluene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Trichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Trichlorofluoromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Vinyl chloride	< 1.0	1.0	µg/L	N/A	2017-04-11	
Xylenes (total)	< 2.0	2.0	µg/L	N/A	2017-04-11	
Surrogate: Toluene-d8	*79*	*70-130*	%	*N/A*	*2017-04-11*	
Surrogate: 4-Bromofluorobenzene	*97*	*70-130*	%	*N/A*	*2017-04-11*	
Surrogate: 1,4-Dichlorobenzene-d4	*72*	*70-130*	%	*N/A*	*2017-04-11*	
Sample ID: DMW - 4 (7040434-06) [Water] Sampled: 2017-04-05 00:00						
Anions						
Bromide	< 0.10	0.10	mg/L	N/A	2017-04-08	
Chloride	**12.8**	0.10	mg/L	N/A	2017-04-08	
Fluoride	**0.34**	0.10	mg/L	N/A	2017-04-08	
Nitrate (as N)	**0.494**	0.010	mg/L	N/A	2017-04-08	
Nitrite (as N)	< 0.010	0.010	mg/L	N/A	2017-04-08	
Sulfate	**153**	1.0	mg/L	N/A	2017-04-08	
General Parameters						
Alkalinity, Total (as CaCO3)	**399**	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Bicarbonate (as CaCO3)	**399**	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Carbonate (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Bicarbonate (HCO3)	**486**	1.22	mg/L	N/A	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	N/A	
Ammonia, Total (as N)	**0.024**	0.020	mg/L	N/A	2017-04-09	
Conductivity (EC)	**955**	2.0	µS/cm	N/A	2017-04-09	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: DMW - 4 (7040434-06) [Water] Sampled: 2017-04-05 00:00, Continued						
General Parameters, Continued						
pH	**7.76**	0.01	pH units	N/A	2017-04-09	HT2
Solids, Total Suspended	< 2	2	mg/L	N/A	2017-04-11	
Turbidity	**0.25**	0.10	NTU	N/A	2017-04-07	
Calculated Parameters						
Hardness, Total (as CaCO3)	**515**	0.500	mg/L	N/A	N/A	
Total Metals						
Aluminum, total	< 0.005	0.005	mg/L	2017-04-07	2017-04-08	
Antimony, total	**0.0001**	0.0001	mg/L	2017-04-07	2017-04-08	
Arsenic, total	**0.0010**	0.0005	mg/L	2017-04-07	2017-04-08	
Barium, total	**0.016**	0.005	mg/L	2017-04-07	2017-04-08	
Beryllium, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Bismuth, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Boron, total	**0.106**	0.004	mg/L	2017-04-07	2017-04-08	
Cadmium, total	< 0.00001	0.00001	mg/L	2017-04-07	2017-04-08	
Calcium, total	**73.2**	0.2	mg/L	2017-04-07	2017-04-08	
Chromium, total	< 0.0005	0.0005	mg/L	2017-04-07	2017-04-08	
Cobalt, total	**0.00077**	0.00005	mg/L	2017-04-07	2017-04-08	
Copper, total	**0.0394**	0.0002	mg/L	2017-04-07	2017-04-08	
Iron, total	**0.03**	0.01	mg/L	2017-04-07	2017-04-08	
Lead, total	**0.0002**	0.0001	mg/L	2017-04-07	2017-04-08	
Lithium, total	**0.0192**	0.0001	mg/L	2017-04-07	2017-04-08	
Magnesium, total	**80.5**	0.01	mg/L	2017-04-07	2017-04-08	
Manganese, total	**0.0017**	0.0002	mg/L	2017-04-07	2017-04-08	
Mercury, total	< 0.00002	0.00002	mg/L	2017-04-11	2017-04-12	
Molybdenum, total	**0.0014**	0.0001	mg/L	2017-04-07	2017-04-08	
Nickel, total	**0.0017**	0.0002	mg/L	2017-04-07	2017-04-08	
Phosphorus, total	< 0.05	0.05	mg/L	2017-04-07	2017-04-08	
Potassium, total	**4.15**	0.02	mg/L	2017-04-07	2017-04-08	
Selenium, total	**0.0006**	0.0005	mg/L	2017-04-07	2017-04-08	
Silicon, total	**7.3**	0.5	mg/L	2017-04-07	2017-04-08	
Silver, total	< 0.00005	0.00005	mg/L	2017-04-07	2017-04-08	
Sodium, total	**21.1**	0.02	mg/L	2017-04-07	2017-04-08	
Strontium, total	**2.30**	0.001	mg/L	2017-04-07	2017-04-08	
Sulfur, total	**46**	3	mg/L	2017-04-07	2017-04-08	
Tellurium, total	< 0.0002	0.0002	mg/L	2017-04-07	2017-04-08	
Thallium, total	< 0.00002	0.00002	mg/L	2017-04-07	2017-04-08	
Thorium, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Tin, total	< 0.0002	0.0002	mg/L	2017-04-07	2017-04-08	
Titanium, total	< 0.005	0.005	mg/L	2017-04-07	2017-04-08	
Uranium, total	**0.00225**	0.00002	mg/L	2017-04-07	2017-04-08	
Vanadium, total	< 0.001	0.001	mg/L	2017-04-07	2017-04-08	
Zinc, total	**0.024**	0.004	mg/L	2017-04-07	2017-04-08	
Zirconium, total	**0.0004**	0.0001	mg/L	2017-04-07	2017-04-08	
Volatile Organic Compounds (VOC)						

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: DMW - 4 (7040434-06) [Water] Sampled: 2017-04-05 00:00, Continued						
Volatile Organic Compounds (VOC), Continued						
Benzene	< 0.5	0.5	µg/L	N/A	2017-04-11	
Bromodichloromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Bromoform	< 1.0	1.0	µg/L	N/A	2017-04-11	
Carbon tetrachloride	< 0.5	0.5	µg/L	N/A	2017-04-11	
Chlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Chloroethane	< 2.0	2.0	µg/L	N/A	2017-04-11	
Chloroform	< 1.0	1.0	µg/L	N/A	2017-04-11	
Dibromochloromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dibromoethane	< 0.2	0.2	µg/L	N/A	2017-04-11	
Dibromomethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	N/A	2017-04-11	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichloropropane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,3-Dichloropropene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Ethylbenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	N/A	2017-04-11	
Dichloromethane	< 3.0	3.0	µg/L	N/A	2017-04-11	
Styrene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	N/A	2017-04-11	
Tetrachloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Toluene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Trichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Trichlorofluoromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Vinyl chloride	< 1.0	1.0	µg/L	N/A	2017-04-11	
Xylenes (total)	< 2.0	2.0	µg/L	N/A	2017-04-11	
Surrogate: Toluene-d8	*82*	*70-130*	%	*N/A*	*2017-04-11*	
Surrogate: 4-Bromofluorobenzene	*102*	*70-130*	%	*N/A*	*2017-04-11*	
Surrogate: 1,4-Dichlorobenzene-d4	*77*	*70-130*	%	*N/A*	*2017-04-11*	
Sample ID: DMW - 1b (7040434-07) [Water] Sampled: 2017-04-05 00:00						
Anions						
Bromide	< 0.10	0.10	mg/L	N/A	2017-04-08	
Chloride	**42.1**	0.10	mg/L	N/A	2017-04-08	
Fluoride	**1.25**	0.10	mg/L	N/A	2017-04-08	
Nitrate (as N)	< 0.010	0.010	mg/L	N/A	2017-04-08	
Nitrite (as N)	< 0.010	0.010	mg/L	N/A	2017-04-08	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: DMW - 1b (7040434-07) [Water] Sampled: 2017-04-05 00:00, Continued						
Anions, Continued						
Sulfate	**126**	1.0	mg/L	N/A	2017-04-08	
General Parameters						
Alkalinity, Total (as CaCO3)	**504**	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Bicarbonate (as CaCO3)	**504**	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Carbonate (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	2.0	mg/L	N/A	2017-04-09	
Bicarbonate (HCO3)	**614**	1.22	mg/L	N/A	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	N/A	
Ammonia, Total (as N)	**0.239**	0.020	mg/L	N/A	2017-04-09	
Conductivity (EC)	**1140**	2.0	µS/cm	N/A	2017-04-09	
pH	**7.67**	0.01	pH units	N/A	2017-04-09	HT2
Solids, Total Suspended	< 2	2	mg/L	N/A	2017-04-11	
Turbidity	**2.40**	0.10	NTU	N/A	2017-04-07	
Calculated Parameters						
Hardness, Total (as CaCO3)	**676**	0.500	mg/L	N/A	N/A	
Total Metals						
Aluminum, total	**0.005**	0.005	mg/L	2017-04-07	2017-04-08	
Antimony, total	**0.0003**	0.0001	mg/L	2017-04-07	2017-04-08	
Arsenic, total	**0.0326**	0.0005	mg/L	2017-04-07	2017-04-08	
Barium, total	**0.025**	0.005	mg/L	2017-04-07	2017-04-08	
Beryllium, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Bismuth, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Boron, total	**0.137**	0.004	mg/L	2017-04-07	2017-04-08	
Cadmium, total	< 0.00001	0.00001	mg/L	2017-04-07	2017-04-08	
Calcium, total	**77.3**	0.2	mg/L	2017-04-07	2017-04-08	
Chromium, total	< 0.0005	0.0005	mg/L	2017-04-07	2017-04-08	
Cobalt, total	**0.00050**	0.00005	mg/L	2017-04-07	2017-04-08	
Copper, total	**0.0079**	0.0002	mg/L	2017-04-07	2017-04-08	
Iron, total	**0.43**	0.01	mg/L	2017-04-07	2017-04-08	
Lead, total	**0.0002**	0.0001	mg/L	2017-04-07	2017-04-08	
Lithium, total	**0.0236**	0.0001	mg/L	2017-04-07	2017-04-08	
Magnesium, total	**117**	0.01	mg/L	2017-04-07	2017-04-08	
Manganese, total	**0.0110**	0.0002	mg/L	2017-04-07	2017-04-08	
Mercury, total	< 0.00002	0.00002	mg/L	2017-04-11	2017-04-12	
Molybdenum, total	**0.0003**	0.0001	mg/L	2017-04-07	2017-04-08	
Nickel, total	**0.0020**	0.0002	mg/L	2017-04-07	2017-04-08	
Phosphorus, total	< 0.05	0.05	mg/L	2017-04-07	2017-04-08	
Potassium, total	**4.73**	0.02	mg/L	2017-04-07	2017-04-08	
Selenium, total	< 0.0005	0.0005	mg/L	2017-04-07	2017-04-08	
Silicon, total	**7.5**	0.5	mg/L	2017-04-07	2017-04-08	
Silver, total	< 0.00005	0.00005	mg/L	2017-04-07	2017-04-08	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: DMW - 1b (7040434-07) [Water] Sampled: 2017-04-05 00:00, Continued						
Total Metals, Continued						
Sodium, total	**26.3**	0.02	mg/L	2017-04-07	2017-04-08	
Strontium, total	**1.78**	0.001	mg/L	2017-04-07	2017-04-08	
Sulfur, total	**43**	3	mg/L	2017-04-07	2017-04-08	
Tellurium, total	< 0.0002	0.0002	mg/L	2017-04-07	2017-04-08	
Thallium, total	< 0.00002	0.00002	mg/L	2017-04-07	2017-04-08	
Thorium, total	< 0.0001	0.0001	mg/L	2017-04-07	2017-04-08	
Tin, total	< 0.0002	0.0002	mg/L	2017-04-07	2017-04-08	
Titanium, total	< 0.005	0.005	mg/L	2017-04-07	2017-04-08	
Uranium, total	**0.00020**	0.00002	mg/L	2017-04-07	2017-04-08	
Vanadium, total	< 0.001	0.001	mg/L	2017-04-07	2017-04-08	
Zinc, total	**0.017**	0.004	mg/L	2017-04-07	2017-04-08	
Zirconium, total	**0.0012**	0.0001	mg/L	2017-04-07	2017-04-08	
Volatile Organic Compounds (VOC)						
Benzene	< 0.5	0.5	µg/L	N/A	2017-04-11	
Bromodichloromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Bromoform	< 1.0	1.0	µg/L	N/A	2017-04-11	
Carbon tetrachloride	< 0.5	0.5	µg/L	N/A	2017-04-11	
Chlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Chloroethane	< 2.0	2.0	µg/L	N/A	2017-04-11	
Chloroform	< 1.0	1.0	µg/L	N/A	2017-04-11	
Dibromochloromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dibromoethane	< 0.2	0.2	µg/L	N/A	2017-04-11	
Dibromomethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichlorobenzene	< 0.5	0.5	µg/L	N/A	2017-04-11	
1,3-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,4-Dichlorobenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,2-Dichloropropane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,3-Dichloropropene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Ethylbenzene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Methyl tert-butyl ether	< 1.0	1.0	µg/L	N/A	2017-04-11	
Dichloromethane	< 3.0	3.0	µg/L	N/A	2017-04-11	
Styrene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L	N/A	2017-04-11	
Tetrachloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Toluene	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,1-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
1,1,2-Trichloroethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Trichloroethylene	< 1.0	1.0	µg/L	N/A	2017-04-11	
Trichlorofluoromethane	< 1.0	1.0	µg/L	N/A	2017-04-11	
Vinyl chloride	< 1.0	1.0	µg/L	N/A	2017-04-11	

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result / *Recovery*	MRL / *Limits*	Units	Prepared	Analyzed	Notes
Sample ID: DMW - 1b (7040434-07) [Water] Sampled: 2017-04-05 00:00, Continued						
Volatile Organic Compounds (VOC), Continued						
Xylenes (total)	< 2.0	2.0	µg/L	N/A	2017-04-11	
Surrogate: Toluene-d8	*79*	*70-130*	%	*N/A*	*2017-04-11*	
Surrogate: 4-Bromofluorobenzene	*97*	*70-130*	%	*N/A*	*2017-04-11*	
Surrogate: 1,4-Dichlorobenzene-d4	*70*	*70-130*	%	*N/A*	*2017-04-11*	

Sample / Analysis Qualifiers:

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: Laboratory reagent water is carried through sample preparation and analysis steps. Method Blanks indicate that results are free from contamination, i.e. not biased high from sources such as the sample container or the laboratory environment
- **Duplicate (Dup)**: Preparation and analysis of a replicate aliquot of a sample. Duplicates provide a measure of the analytical method's precision, i.e. how reproducible a result is. Duplicates are only reported if they are associated with your sample data.
- **Blank Spike (BS)**: A known amount of standard is carried through sample preparation and analysis steps. Blank Spikes, also known as laboratory control samples (LCS), are prepared from a different source of standard than used for the calibration. They ensure that the calibration is acceptable (i.e. not biased high or low) and also provide a measure of the analytical method's accuracy (i.e. closeness of the result to a target value).
- **Standard Reference Material (SRM)**: A material of similar matrix to the samples, externally certified for the parameter(s) listed. Standard Reference Materials ensure that the preparation steps in the method are adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Anions, Batch B7D0418										
Blank (B7D0418-BLK1)				Prepared: 2017-04-08, Analyzed: 2017-04-08						
Bromide	< 0.10	0.10	mg/L							
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
Blank (B7D0418-BLK2)				Prepared: 2017-04-08, Analyzed: 2017-04-08						
Bromide	< 0.10	0.10	mg/L							
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
LCS (B7D0418-BS1)				Prepared: 2017-04-08, Analyzed: 2017-04-08						
Bromide	4.20	0.10	mg/L	4.00		105	85-115			
Chloride	16.0	0.10	mg/L	16.0		100	90-110			
Fluoride	3.86	0.10	mg/L	4.00		96	88-108			
Nitrate (as N)	4.22	0.010	mg/L	4.00		105	93-108			
Nitrite (as N)	1.98	0.010	mg/L	2.00		99	83-110			
Phosphate (as P)	0.989	0.010	mg/L	1.00		99	85-115			
Sulfate	16.2	1.0	mg/L	16.0		101	91-109			
LCS (B7D0418-BS2)				Prepared: 2017-04-08, Analyzed: 2017-04-08						
Bromide	4.20	0.10	mg/L	4.00		105	85-115			
Chloride	16.0	0.10	mg/L	16.0		100	90-110			
Fluoride	3.84	0.10	mg/L	4.00		96	88-108			
Nitrate (as N)	4.30	0.010	mg/L	4.00		107	93-108			
Nitrite (as N)	1.99	0.010	mg/L	2.00		99	83-110			
Phosphate (as P)	1.01	0.010	mg/L	1.00		101	85-115			

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Anions, Batch B7D0418, Continued										
LCS (B7D0418-BS2), Continued				Prepared: 2017-04-08, Analyzed: 2017-04-08						
Sulfate	16.0	1.0	mg/L	16.0		100	91-109			
Dissolved Metals, Batch B7D0413										
Blank (B7D0413-BLK1)				Prepared: 2017-04-08, Analyzed: 2017-04-08						
Aluminum, dissolved	< 0.005	0.005	mg/L							
Antimony, dissolved	< 0.0001	0.0001	mg/L							
Arsenic, dissolved	< 0.0005	0.0005	mg/L							
Barium, dissolved	< 0.005	0.005	mg/L							
Beryllium, dissolved	< 0.0001	0.0001	mg/L							
Bismuth, dissolved	< 0.0001	0.0001	mg/L							
Boron, dissolved	< 0.004	0.004	mg/L							
Cadmium, dissolved	< 0.00001	0.00001	mg/L							
Calcium, dissolved	< 0.2	0.2	mg/L							
Chromium, dissolved	< 0.0005	0.0005	mg/L							
Cobalt, dissolved	< 0.00005	0.00005	mg/L							
Copper, dissolved	< 0.0002	0.0002	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.0001	0.0001	mg/L							
Lithium, dissolved	< 0.0001	0.0001	mg/L							
Magnesium, dissolved	< 0.01	0.01	mg/L							
Manganese, dissolved	< 0.0002	0.0002	mg/L							
Molybdenum, dissolved	< 0.0001	0.0001	mg/L							
Nickel, dissolved	< 0.0002	0.0002	mg/L							
Phosphorus, dissolved	< 0.05	0.05	mg/L							
Potassium, dissolved	< 0.02	0.02	mg/L							
Selenium, dissolved	< 0.0005	0.0005	mg/L							
Silicon, dissolved	< 0.5	0.5	mg/L							
Silver, dissolved	< 0.00005	0.00005	mg/L							
Sodium, dissolved	< 0.02	0.02	mg/L							
Strontium, dissolved	< 0.001	0.001	mg/L							
Sulfur, dissolved	< 1	3	mg/L							
Tellurium, dissolved	< 0.0002	0.0002	mg/L							
Thallium, dissolved	< 0.00002	0.00002	mg/L							
Thorium, dissolved	< 0.0001	0.0001	mg/L							
Tin, dissolved	< 0.0002	0.0002	mg/L							
Titanium, dissolved	< 0.005	0.005	mg/L							
Uranium, dissolved	< 0.00002	0.00002	mg/L							
Vanadium, dissolved	< 0.001	0.001	mg/L							
Zinc, dissolved	< 0.004	0.004	mg/L							
Zirconium, dissolved	< 0.0001	0.0001	mg/L							
Reference (B7D0413-SRM1)				Prepared: 2017-04-08, Analyzed: 2017-04-08						
Aluminum, dissolved	0.224	0.005	mg/L	0.233		96	58-142			
Antimony, dissolved	0.0424	0.0001	mg/L	0.0430		99	75-125			
Arsenic, dissolved	0.423	0.0005	mg/L	0.438		97	81-119			
Barium, dissolved	3.35	0.005	mg/L	3.35		100	83-117			
Beryllium, dissolved	0.211	0.0001	mg/L	0.213		99	80-120			
Boron, dissolved	1.68	0.004	mg/L	1.74		97	74-117			
Cadmium, dissolved	0.220	0.00001	mg/L	0.224		98	83-117			
Calcium, dissolved	7.4	0.2	mg/L	7.69		97	76-124			
Chromium, dissolved	0.435	0.0005	mg/L	0.437		100	81-119			
Cobalt, dissolved	0.125	0.00005	mg/L	0.128		98	76-124			
Copper, dissolved	0.856	0.0002	mg/L	0.844		101	84-116			
Iron, dissolved	1.27	0.010	mg/L	1.29		99	74-126			
Lead, dissolved	0.112	0.0001	mg/L	0.112		100	72-128			

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Dissolved Metals, Batch B7D0413, Continued										
Reference (B7D0413-SRM1), Continued				Prepared: 2017-04-08, Analyzed: 2017-04-08						
Lithium, dissolved	0.105	0.0001	mg/L	0.104		101	60-140			
Magnesium, dissolved	6.80	0.01	mg/L	6.92		98	81-119			
Manganese, dissolved	0.342	0.0002	mg/L	0.345		99	84-116			
Molybdenum, dissolved	0.420	0.0001	mg/L	0.426		99	83-117			
Nickel, dissolved	0.809	0.0002	mg/L	0.840		96	74-126			
Phosphorus, dissolved	0.47	0.05	mg/L	0.495		95	68-132			
Potassium, dissolved	3.15	0.02	mg/L	3.19		99	74-126			
Selenium, dissolved	0.0321	0.0005	mg/L	0.0331		97	70-130			
Sodium, dissolved	18.6	0.02	mg/L	19.1		98	72-128			
Strontium, dissolved	0.896	0.001	mg/L	0.916		98	84-113			
Thallium, dissolved	0.0397	0.00002	mg/L	0.0393		101	57-143			
Uranium, dissolved	0.261	0.00002	mg/L	0.266		98	85-115			
Vanadium, dissolved	0.853	0.001	mg/L	0.869		98	87-113			
Zinc, dissolved	0.850	0.004	mg/L	0.881		97	72-128			
Dissolved Metals, Batch B7D0551										
Blank (B7D0551-BLK1)				Prepared: 2017-04-10, Analyzed: 2017-04-11						
Mercury, dissolved	< 0.00002	0.00002	mg/L							
Blank (B7D0551-BLK2)				Prepared: 2017-04-10, Analyzed: 2017-04-11						
Mercury, dissolved	< 0.00002	0.00002	mg/L							
Reference (B7D0551-SRM1)				Prepared: 2017-04-10, Analyzed: 2017-04-11						
Mercury, dissolved	0.00491	0.00002	mg/L	0.00489		100	50-150			
Reference (B7D0551-SRM2)				Prepared: 2017-04-10, Analyzed: 2017-04-11						
Mercury, dissolved	0.00418	0.00002	mg/L	0.00489		85	50-150			
General Parameters, Batch B7D0360										
Blank (B7D0360-BLK1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Turbidity	< 0.10	0.10	NTU							
LCS (B7D0360-BS1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Turbidity	39.2	0.10	NTU	40.0		98	90-110			
General Parameters, Batch B7D0439										
Blank (B7D0439-BLK1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Turbidity	< 0.10	0.10	NTU							
Blank (B7D0439-BLK2)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Turbidity	< 0.10	0.10	NTU							
LCS (B7D0439-BS1)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Turbidity	39.4	0.10	NTU	40.0		98	90-110			
LCS (B7D0439-BS2)				Prepared: 2017-04-07, Analyzed: 2017-04-07						
Turbidity	39.5	0.10	NTU	40.0		99	90-110			
General Parameters, Batch B7D0486										
Blank (B7D0486-BLK1)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
Ammonia, Total (as N)	< 0.005	0.020	mg/L							

REPORTED TO Western Water Associates Ltd
PROJECT CSRD Refuse Disposal - Golden MR17006

WORK ORDER 7040434
REPORTED 2017-04-13

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
General Parameters, Batch B7D0486, Continued										
Blank (B7D0486-BLK2)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
Ammonia, Total (as N)	< 0.005	0.020	mg/L							
Blank (B7D0486-BLK3)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
Ammonia, Total (as N)	< 0.005	0.020	mg/L							
LCS (B7D0486-BS1)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
Ammonia, Total (as N)	1.06	0.020	mg/L	1.00		106	86-111			
LCS (B7D0486-BS2)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
Ammonia, Total (as N)	1.03	0.020	mg/L	1.00		103	86-111			
LCS (B7D0486-BS3)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
Ammonia, Total (as N)	1.01	0.020	mg/L	1.00		101	86-111			
General Parameters, Batch B7D0494										
Blank (B7D0494-BLK1)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
Alkalinity, Total (as CaCO3)	< 1.0	2.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	2.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	2.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	2.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	2.0	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B7D0494-BLK2)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
Alkalinity, Total (as CaCO3)	< 1.0	2.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	2.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	2.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	2.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	2.0	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B7D0494-BS1)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
Alkalinity, Total (as CaCO3)	103	2.0	mg/L	100		103	92-106			
LCS (B7D0494-BS2)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
Conductivity (EC)	1390	2.0	µS/cm	1410		99	95-104			
LCS (B7D0494-BS3)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
Alkalinity, Total (as CaCO3)	103	2.0	mg/L	100		103	92-106			
LCS (B7D0494-BS4)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
Conductivity (EC)	1400	2.0	µS/cm	1410		99	95-104			
Duplicate (B7D0494-DUP1)		**Source: 7040434-07**		Prepared: 2017-04-09, Analyzed: 2017-04-09						
Alkalinity, Total (as CaCO3)	501	2.0	mg/L		504			< 1	10	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	2.0	mg/L		< 1.0				10	
Alkalinity, Bicarbonate (as CaCO3)	501	2.0	mg/L		504			< 1	10	
Alkalinity, Carbonate (as CaCO3)	< 1.0	2.0	mg/L		< 1.0				10	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	2.0	mg/L		< 1.0				10	
Conductivity (EC)	1140	2.0	µS/cm		1140			< 1	5	
pH	7.67	0.01	pH units		7.67			< 1	4	
Reference (B7D0494-SRM1)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
pH	6.99	0.01	pH units	7.00		100	98-102			

REPORTED TO Western Water Associates Ltd
PROJECT CSRD Refuse Disposal - Golden MR17006

WORK ORDER 7040434
REPORTED 2017-04-13

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
General Parameters, Batch B7D0494, Continued										
Reference (B7D0494-SRM2)				Prepared: 2017-04-09, Analyzed: 2017-04-09						
pH	6.99	0.01	pH units	7.00		100	98-102			
General Parameters, Batch B7D0543										
Blank (B7D0543-BLK1)				Prepared: 2017-04-10, Analyzed: 2017-04-10						
Conductivity (EC)	1.0	2.0	µS/cm							BLK
Blank (B7D0543-BLK2)				Prepared: 2017-04-10, Analyzed: 2017-04-10						
Conductivity (EC)	1.0	2.0	µS/cm							BLK
LCS (B7D0543-BS3)				Prepared: 2017-04-10, Analyzed: 2017-04-10						
Conductivity (EC)	1380	2.0	µS/cm	1410		98	95-104			
LCS (B7D0543-BS4)				Prepared: 2017-04-10, Analyzed: 2017-04-10						
Conductivity (EC)	1420	2.0	µS/cm	1410		100	95-104			
Reference (B7D0543-SRM1)				Prepared: 2017-04-10, Analyzed: 2017-04-10						
pH	7.00	0.01	pH units	7.00		100	98-102			
Reference (B7D0543-SRM2)				Prepared: 2017-04-10, Analyzed: 2017-04-10						
pH	7.00	0.01	pH units	7.00		100	98-102			
General Parameters, Batch B7D0577										
Blank (B7D0577-BLK1)				Prepared: 2017-04-11, Analyzed: 2017-04-11						
Alkalinity, Total (as CaCO3)	< 1.0	2.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	2.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	2.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	2.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	2.0	mg/L							
LCS (B7D0577-BS1)				Prepared: 2017-04-11, Analyzed: 2017-04-11						
Alkalinity, Total (as CaCO3)	97.0	2.0	mg/L	100		97	92-106			
Duplicate (B7D0577-DUP1)		**Source: 7040434-01**		Prepared: 2017-04-11, Analyzed: 2017-04-11						
Alkalinity, Total (as CaCO3)	3100	2.0	mg/L		3050			2	10	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	2.0	mg/L		< 1.0				10	
Alkalinity, Bicarbonate (as CaCO3)	3100	2.0	mg/L		3050			2	10	
Alkalinity, Carbonate (as CaCO3)	< 1.0	2.0	mg/L		< 1.0				10	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	2.0	mg/L		< 1.0				10	
General Parameters, Batch B7D0578										
Blank (B7D0578-BLK1)				Prepared: 2017-04-11, Analyzed: 2017-04-11						
Solids, Total Suspended	< 1	2	mg/L							
LCS (B7D0578-BS1)				Prepared: 2017-04-11, Analyzed: 2017-04-11						
Solids, Total Suspended	50	2	mg/L	50.0		99	91-106			
General Parameters, Batch B7D0607										
Blank (B7D0607-BLK1)				Prepared: 2017-04-11, Analyzed: 2017-04-11						
Solids, Total Suspended	< 1	2	mg/L							
LCS (B7D0607-BS1)				Prepared: 2017-04-11, Analyzed: 2017-04-11						
Solids, Total Suspended	48	2	mg/L	50.0		97	91-106			

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes

General Parameters, Batch B7D0607, Continued

Total Metals, Batch B7D0411

Blank (B7D0411-BLK1)				Prepared: 2017-04-07, Analyzed: 2017-04-08						
Aluminum, total	< 0.005	0.005	mg/L							
Antimony, total	< 0.0001	0.0001	mg/L							
Arsenic, total	< 0.0005	0.0005	mg/L							
Barium, total	< 0.005	0.005	mg/L							
Beryllium, total	< 0.0001	0.0001	mg/L							
Bismuth, total	< 0.0001	0.0001	mg/L							
Boron, total	< 0.004	0.004	mg/L							
Cadmium, total	< 0.00001	0.00001	mg/L							
Calcium, total	< 0.2	0.2	mg/L							
Chromium, total	< 0.0005	0.0005	mg/L							
Cobalt, total	< 0.00005	0.00005	mg/L							
Copper, total	< 0.0002	0.0002	mg/L							
Iron, total	< 0.01	0.01	mg/L							
Lead, total	< 0.0001	0.0001	mg/L							
Lithium, total	< 0.0001	0.0001	mg/L							
Magnesium, total	< 0.01	0.01	mg/L							
Manganese, total	< 0.0002	0.0002	mg/L							
Molybdenum, total	< 0.0001	0.0001	mg/L							
Nickel, total	< 0.0002	0.0002	mg/L							
Phosphorus, total	< 0.05	0.05	mg/L							
Potassium, total	< 0.02	0.02	mg/L							
Selenium, total	< 0.0005	0.0005	mg/L							
Silicon, total	< 0.5	0.5	mg/L							
Silver, total	< 0.00005	0.00005	mg/L							
Sodium, total	< 0.02	0.02	mg/L							
Strontium, total	< 0.001	0.001	mg/L							
Sulfur, total	< 1	3	mg/L							
Tellurium, total	< 0.0002	0.0002	mg/L							
Thallium, total	< 0.00002	0.00002	mg/L							
Thorium, total	< 0.0001	0.0001	mg/L							
Tin, total	< 0.0002	0.0002	mg/L							
Titanium, total	< 0.005	0.005	mg/L							
Uranium, total	< 0.00002	0.00002	mg/L							
Vanadium, total	< 0.001	0.001	mg/L							
Zinc, total	< 0.004	0.004	mg/L							
Zirconium, total	< 0.0001	0.0001	mg/L							
Reference (B7D0411-SRM1)				Prepared: 2017-04-07, Analyzed: 2017-04-08						
Aluminum, total	0.304	0.005	mg/L	0.303		100	81-129			
Antimony, total	0.0500	0.0001	mg/L	0.0511		98	88-114			
Arsenic, total	0.118	0.0005	mg/L	0.118		100	88-114			
Barium, total	0.822	0.005	mg/L	0.823		100	72-104			
Beryllium, total	0.0504	0.0001	mg/L	0.0496		102	76-131			
Boron, total	3.49	0.004	mg/L	3.45		101	75-121			
Cadmium, total	0.0506	0.00001	mg/L	0.0495		102	89-111			
Calcium, total	11.9	0.2	mg/L	11.6		103	86-121			
Chromium, total	0.249	0.0005	mg/L	0.250		100	89-114			
Cobalt, total	0.0395	0.00005	mg/L	0.0377		105	91-113			
Copper, total	0.505	0.0002	mg/L	0.486		104	91-115			
Iron, total	0.50	0.01	mg/L	0.488		102	77-124			
Lead, total	0.203	0.0001	mg/L	0.204		100	92-113			
Lithium, total	0.412	0.0001	mg/L	0.403		102	85-115			
Magnesium, total	3.87	0.01	mg/L	3.79		102	78-120			
Manganese, total	0.106	0.0002	mg/L	0.109		97	90-114			

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Total Metals, Batch B7D0411, Continued										
Reference (B7D0411-SRM1), Continued				Prepared: 2017-04-07, Analyzed: 2017-04-08						
Molybdenum, total	0.204	0.0001	mg/L	0.198		103	90-111			
Nickel, total	0.256	0.0002	mg/L	0.249		103	90-111			
Phosphorus, total	0.22	0.05	mg/L	0.227		98	85-115			
Potassium, total	7.21	0.02	mg/L	7.21		100	84-113			
Selenium, total	0.121	0.0005	mg/L	0.121		100	85-115			
Sodium, total	8.02	0.02	mg/L	7.54		106	82-123			
Strontium, total	0.380	0.001	mg/L	0.375		101	88-112			
Thallium, total	0.0830	0.00002	mg/L	0.0805		103	91-114			
Uranium, total	0.0302	0.00002	mg/L	0.0306		99	85-120			
Vanadium, total	0.377	0.001	mg/L	0.386		98	86-111			
Zinc, total	2.48	0.004	mg/L	2.49		100	85-111			
Total Metals, Batch B7D0647										
Blank (B7D0647-BLK1)				Prepared: 2017-04-11, Analyzed: 2017-04-12						
Mercury, total	< 0.00002	0.00002	mg/L							
Blank (B7D0647-BLK2)				Prepared: 2017-04-11, Analyzed: 2017-04-12						
Mercury, total	< 0.00002	0.00002	mg/L							
Reference (B7D0647-SRM1)				Prepared: 2017-04-11, Analyzed: 2017-04-12						
Mercury, total	0.00495	0.00002	mg/L	0.00489		101	50-150			
Reference (B7D0647-SRM2)				Prepared: 2017-04-11, Analyzed: 2017-04-12						
Mercury, total	0.00466	0.00002	mg/L	0.00489		95	50-150			
Volatile Organic Compounds (VOC), Batch B7D0548										
Blank (B7D0548-BLK1)				Prepared: 2017-04-11, Analyzed: 2017-04-11						
Benzene	< 0.5	0.5	µg/L							
Bromodichloromethane	< 1.0	1.0	µg/L							
Bromoform	< 1.0	1.0	µg/L							
Carbon tetrachloride	< 0.5	0.5	µg/L							
Chlorobenzene	< 1.0	1.0	µg/L							
Chloroethane	< 2.0	2.0	µg/L							
Chloroform	< 1.0	1.0	µg/L							
Dibromochloromethane	< 1.0	1.0	µg/L							
1,2-Dibromoethane	< 0.2	0.2	µg/L							
Dibromomethane	< 1.0	1.0	µg/L							
1,2-Dichlorobenzene	< 0.5	0.5	µg/L							
1,3-Dichlorobenzene	< 1.0	1.0	µg/L							
1,4-Dichlorobenzene	< 1.0	1.0	µg/L							
1,1-Dichloroethane	< 1.0	1.0	µg/L							
1,2-Dichloroethane	< 1.0	1.0	µg/L							
1,1-Dichloroethylene	< 1.0	1.0	µg/L							
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
1,2-Dichloropropane	< 1.0	1.0	µg/L							
1,3-Dichloropropene	< 1.0	1.0	µg/L							
Ethylbenzene	< 1.0	1.0	µg/L							
Methyl tert-butyl ether	< 1.0	1.0	µg/L							
Dichloromethane	< 3.0	3.0	µg/L							
Styrene	< 1.0	1.0	µg/L							
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L							
Tetrachloroethylene	< 1.0	1.0	µg/L							
Toluene	< 1.0	1.0	µg/L							

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Volatile Organic Compounds (VOC), Batch B7D0548, Continued										
Blank (B7D0548-BLK1), Continued				Prepared: 2017-04-11, Analyzed: 2017-04-11						
1,1,1-Trichloroethane	< 1.0	1.0	µg/L							
1,1,2-Trichloroethane	< 1.0	1.0	µg/L							
Trichloroethylene	< 1.0	1.0	µg/L							
Trichlorofluoromethane	< 1.0	1.0	µg/L							
Vinyl chloride	< 1.0	1.0	µg/L							
Xylenes (total)	< 2.0	2.0	µg/L							
Surrogate: Toluene-d8	*18.0*		*µg/L*	25.0		*72*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*22.0*		*µg/L*	25.0		*88*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*15.8*		*µg/L*	25.0		*63*	*70-130*			*S02*
LCS (B7D0548-BS1)				Prepared: 2017-04-11, Analyzed: 2017-04-11						
Benzene	22.8	0.5	µg/L	20.0		114	70-130			
Bromodichloromethane	20.8	1.0	µg/L	20.0		104	70-130			
Bromoform	20.4	1.0	µg/L	20.0		102	70-130			
Carbon tetrachloride	21.7	0.5	µg/L	20.0		108	70-130			
Chlorobenzene	21.5	1.0	µg/L	20.0		108	70-130			
Chloroethane	24.2	2.0	µg/L	20.0		121	70-130			
Chloroform	21.8	1.0	µg/L	20.0		109	70-130			
Dibromochloromethane	20.1	1.0	µg/L	20.0		100	70-130			
1,2-Dibromoethane	19.2	0.2	µg/L	20.0		96	70-130			
Dibromomethane	20.7	1.0	µg/L	20.0		104	70-130			
1,2-Dichlorobenzene	23.0	0.5	µg/L	20.0		115	70-130			
1,3-Dichlorobenzene	20.1	1.0	µg/L	20.0		100	70-130			
1,4-Dichlorobenzene	21.6	1.0	µg/L	20.0		108	70-130			
1,1-Dichloroethane	21.0	1.0	µg/L	20.0		105	70-130			
1,2-Dichloroethane	20.6	1.0	µg/L	20.0		103	70-130			
1,1-Dichloroethylene	20.9	1.0	µg/L	20.0		104	70-130			
cis-1,2-Dichloroethylene	21.8	1.0	µg/L	20.0		109	70-130			
trans-1,2-Dichloroethylene	21.1	1.0	µg/L	20.0		105	70-130			
1,2-Dichloropropane	21.4	1.0	µg/L	20.0		107	70-130			
1,3-Dichloropropene	36.2	1.0	µg/L	40.0		91	70-130			
Ethylbenzene	22.0	1.0	µg/L	20.0		110	70-130			
Methyl tert-butyl ether	18.3	1.0	µg/L	20.0		91	70-130			
Dichloromethane	21.1	3.0	µg/L	20.0		106	70-130			
Styrene	21.8	1.0	µg/L	20.0		109	70-130			
1,1,2,2-Tetrachloroethane	20.7	0.5	µg/L	20.0		104	70-130			
Tetrachloroethylene	20.7	1.0	µg/L	20.0		103	70-130			
Toluene	21.8	1.0	µg/L	20.0		109	70-130			
1,1,1-Trichloroethane	21.6	1.0	µg/L	20.0		108	70-130			
1,1,2-Trichloroethane	21.3	1.0	µg/L	20.0		106	70-130			
Trichloroethylene	22.8	1.0	µg/L	20.0		114	70-130			
Trichlorofluoromethane	24.2	1.0	µg/L	20.0		121	70-130			
Vinyl chloride	22.6	1.0	µg/L	20.0		113	70-130			
Xylenes (total)	65.9	2.0	µg/L	60.0		110	70-130			
Surrogate: Toluene-d8	*22.9*		*µg/L*	25.0		*92*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*28.0*		*µg/L*	25.0		*112*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*32.8*		*µg/L*	25.0		*131*	*70-130*			*S02*
Volatile Organic Compounds (VOC), Batch B7D0633										
Blank (B7D0633-BLK1)				Prepared: 2017-04-12, Analyzed: 2017-04-12						
Benzene	< 0.5	0.5	µg/L							
Bromodichloromethane	< 1.0	1.0	µg/L							
Bromoform	< 1.0	1.0	µg/L							
Carbon tetrachloride	< 0.5	0.5	µg/L							
Chlorobenzene	< 1.0	1.0	µg/L							

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Volatile Organic Compounds (VOC), Batch B7D0633, Continued										
Blank (B7D0633-BLK1), Continued				Prepared: 2017-04-12, Analyzed: 2017-04-12						
Chloroethane	< 2.0	2.0	µg/L							
Chloroform	< 1.0	1.0	µg/L							
Dibromochloromethane	< 1.0	1.0	µg/L							
1,2-Dibromoethane	< 0.2	0.2	µg/L							
Dibromomethane	< 1.0	1.0	µg/L							
1,2-Dichlorobenzene	< 0.5	0.5	µg/L							
1,3-Dichlorobenzene	< 1.0	1.0	µg/L							
1,4-Dichlorobenzene	< 1.0	1.0	µg/L							
1,1-Dichloroethane	< 1.0	1.0	µg/L							
1,2-Dichloroethane	< 1.0	1.0	µg/L							
1,1-Dichloroethylene	< 1.0	1.0	µg/L							
cis-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
trans-1,2-Dichloroethylene	< 1.0	1.0	µg/L							
1,2-Dichloropropane	< 1.0	1.0	µg/L							
1,3-Dichloropropene	< 1.0	1.0	µg/L							
Ethylbenzene	< 1.0	1.0	µg/L							
Methyl tert-butyl ether	< 1.0	1.0	µg/L							
Dichloromethane	< 3.0	3.0	µg/L							
Styrene	< 1.0	1.0	µg/L							
1,1,2,2-Tetrachloroethane	< 0.5	0.5	µg/L							
Tetrachloroethylene	< 1.0	1.0	µg/L							
Toluene	< 1.0	1.0	µg/L							
1,1,1-Trichloroethane	< 1.0	1.0	µg/L							
1,1,2-Trichloroethane	< 1.0	1.0	µg/L							
Trichloroethylene	< 1.0	1.0	µg/L							
Trichlorofluoromethane	< 1.0	1.0	µg/L							
Vinyl chloride	< 1.0	1.0	µg/L							
Xylenes (total)	< 2.0	2.0	µg/L							
Surrogate: Toluene-d8	*20.1*		*µg/L*	25.0		*80*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*25.6*		*µg/L*	25.0		*102*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*20.8*		*µg/L*	25.0		*83*	*70-130*			
LCS (B7D0633-BS1)				Prepared: 2017-04-12, Analyzed: 2017-04-12						
Benzene	22.3	0.5	µg/L	20.0		112	70-130			
Bromodichloromethane	19.5	1.0	µg/L	20.0		97	70-130			
Bromoform	17.6	1.0	µg/L	20.0		88	70-130			
Carbon tetrachloride	21.2	0.5	µg/L	20.0		106	70-130			
Chlorobenzene	21.2	1.0	µg/L	20.0		106	70-130			
Chloroethane	23.9	2.0	µg/L	20.0		120	70-130			
Chloroform	21.1	1.0	µg/L	20.0		106	70-130			
Dibromochloromethane	18.2	1.0	µg/L	20.0		91	70-130			
1,2-Dibromoethane	17.6	0.2	µg/L	20.0		88	70-130			
Dibromomethane	19.2	1.0	µg/L	20.0		96	70-130			
1,2-Dichlorobenzene	21.8	0.5	µg/L	20.0		109	70-130			
1,3-Dichlorobenzene	19.4	1.0	µg/L	20.0		97	70-130			
1,4-Dichlorobenzene	20.9	1.0	µg/L	20.0		105	70-130			
1,1-Dichloroethane	20.6	1.0	µg/L	20.0		103	70-130			
1,2-Dichloroethane	19.4	1.0	µg/L	20.0		97	70-130			
1,1-Dichloroethylene	20.7	1.0	µg/L	20.0		104	70-130			
cis-1,2-Dichloroethylene	21.1	1.0	µg/L	20.0		106	70-130			
trans-1,2-Dichloroethylene	20.8	1.0	µg/L	20.0		104	70-130			
1,2-Dichloropropane	20.6	1.0	µg/L	20.0		103	70-130			
1,3-Dichloropropene	33.5	1.0	µg/L	40.0		84	70-130			
Ethylbenzene	21.8	1.0	µg/L	20.0		109	70-130			
Methyl tert-butyl ether	16.7	1.0	µg/L	20.0		84	70-130			
Dichloromethane	20.3	3.0	µg/L	20.0		102	70-130			

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

Analyte	Result	MRL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
Volatile Organic Compounds (VOC), Batch B7D0633, Continued										
LCS (B7D0633-BS1), Continued				Prepared: 2017-04-12, Analyzed: 2017-04-12						
Styrene	21.2	1.0	µg/L	20.0		106	70-130			
1,1,2,2-Tetrachloroethane	18.8	0.5	µg/L	20.0		94	70-130			
Tetrachloroethylene	20.6	1.0	µg/L	20.0		103	70-130			
Toluene	21.6	1.0	µg/L	20.0		108	70-130			
1,1,1-Trichloroethane	21.2	1.0	µg/L	20.0		106	70-130			
1,1,2-Trichloroethane	19.8	1.0	µg/L	20.0		99	70-130			
Trichloroethylene	22.4	1.0	µg/L	20.0		112	70-130			
Trichlorofluoromethane	23.8	1.0	µg/L	20.0		119	70-130			
Vinyl chloride	22.4	1.0	µg/L	20.0		112	70-130			
Xylenes (total)	65.6	2.0	µg/L	60.0		109	70-130			
Surrogate: Toluene-d8	*21.9*		*µg/L*	25.0		*88*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*26.2*		*µg/L*	25.0		*105*	*70-130*			
Surrogate: 1,4-Dichlorobenzene-d4	*30.4*		*µg/L*	25.0		*122*	*70-130*			

QC Qualifiers:

BLK	Analyte concentration in the Method Blank is above the Method Reporting Limit (MRL).
S02	Surrogate recovery outside of control limits. Data accepted based on acceptable recovery of other surrogates.

REPORTED TO Western Water Associates Ltd
PROJECT CSRD Refuse Disposal - Golden MR17006

WORK ORDER 7040434
REPORTED 2017-04-13

		7040434-01	7040434-02	7040434-03	7040434-04	7040434-05	7040434-06
		Water	**Water**	**Water**	**Water**	**Water**	**Water**
		2017-04-05	**2017-04-05**	**2017-04-05**	**2017-04-05**	**2017-04-05**	**2017-04-05**
		Runoff 1	**Runoff 2**	**MW6-S**	**Town Well #4**	**Town Well #6**	**DMW - 4**
Anions	Bromide (mg/L)	1.82	< 10.0	0.88	< 0.10	< 0.10	< 0.10
	Chloride (mg/L)	708	1230	470	90.4	31.0	12.8
	Fluoride (mg/L)	< 1.00	< 1.00	0.14	< 0.10	< 0.10	0.34
	Nitrate (as N) (mg/L)	2.78	< 0.100	42.3	1.39	1.09	0.494
	Nitrite (as N) (mg/L)	< 0.100	< 0.100	5.70	< 0.010	< 0.010	< 0.010
	Phosphate (as P) (mg/L)				< 0.010		
	Sulfate (mg/L)	153	32.7	799	42.8	27.6	153
General Parameters	Alkalinity, Total (as CaCO3) (mg/L)	3050	9700	902	343	314	399
	Alkalinity, Phenolphthalein (as CaCO3) (mg/	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	3050	9700	902	343	314	399
	Alkalinity, Carbonate (as CaCO3) (mg/L)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Bicarbonate (HCO3) (mg/L)	3720	11800	1100	418	383	486
	Carbonate (CO3) (mg/L)	< 0.600	< 0.600	< 0.600	< 0.600	< 0.600	< 0.600
	Hydroxide (OH) (mg/L)	< 0.340	< 0.340	< 0.340	< 0.340	< 0.340	< 0.340
	Ammonia, Total (as N) (mg/L)		928	1.19	0.026	0.030	0.024
	Conductivity (EC) (uS/cm)	8440	13800	4350	959	692	955
	pH (pH units)		7.70	7.42	7.85	7.89	7.76
	Solids, Total Suspended (mg/L)		307	5	< 2	< 2	< 2
	Turbidity (NTU)		212	1.03	< 0.10	0.16	0.25
Calculated Parameters	Hardness, Total (as CaCO3) (mg/L)			1650			
	Hardness, Total (as CaCO3) (mg/L)		2090		398	334	515
Dissolved Metals	Aluminum, dissolved (mg/L)			0.006			
	Antimony, dissolved (mg/L)			0.0001			
	Arsenic, dissolved (mg/L)			0.0007			
	Barium, dissolved (mg/L)			0.057			
	Beryllium, dissolved (mg/L)			< 0.0001			
	Bismuth, dissolved (mg/L)			< 0.0001			
	Boron, dissolved (mg/L)			2.03			
	Cadmium, dissolved (mg/L)			< 0.00001			
	Calcium, dissolved (mg/L)			163			
	Chromium, dissolved (mg/L)			0.0006			
	Cobalt, dissolved (mg/L)			0.00164			
	Copper, dissolved (mg/L)			0.0028			
	Iron, dissolved (mg/L)			< 0.010			
	Lead, dissolved (mg/L)			< 0.0001			
	Lithium, dissolved (mg/L)			0.0484			
	Magnesium, dissolved (mg/L)			302			
	Manganese, dissolved (mg/L)			0.0597			
	Mercury, dissolved (mg/L)			< 0.00002			
	Molybdenum, dissolved (mg/L)			0.0003			
	Nickel, dissolved (mg/L)			0.0110			
	Phosphorus, dissolved (mg/L)			< 0.05			
	Potassium, dissolved (mg/L)			209			

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

		7040434-01	7040434-02	7040434-03	7040434-04	7040434-05	7040434-06
		Water	**Water**	**Water**	**Water**	**Water**	**Water**
		2017-04-05	**2017-04-05**	**2017-04-05**	**2017-04-05**	**2017-04-05**	**2017-04-05**
		Runoff 1	**Runoff 2**	**MW6-S**	**Town Well #4**	**Town Well #6**	**DMW - 4**
Dissolved Metals	Selenium, dissolved (mg/L)			< 0.0005			
	Silicon, dissolved (mg/L)			12.6			
	Silver, dissolved (mg/L)			< 0.00005			
	Sodium, dissolved (mg/L)			343			
	Strontium, dissolved (mg/L)			1.74			
	Sulfur, dissolved (mg/L)			284			
	Tellurium, dissolved (mg/L)			< 0.0002			
	Thallium, dissolved (mg/L)			0.00006			
	Thorium, dissolved (mg/L)			< 0.0001			
	Tin, dissolved (mg/L)			< 0.0002			
	Titanium, dissolved (mg/L)			< 0.005			
	Uranium, dissolved (mg/L)			0.00734			
	Vanadium, dissolved (mg/L)			< 0.001			
	Zinc, dissolved (mg/L)			0.005			
	Zirconium, dissolved (mg/L)			0.0002			
Total Metals	Aluminum, total (mg/L)		2.17		< 0.005	< 0.005	< 0.005
	Antimony, total (mg/L)		0.0063		< 0.0001	< 0.0001	0.0001
	Arsenic, total (mg/L)		0.0524		< 0.0005	< 0.0005	0.0010
	Barium, total (mg/L)		0.259		0.214	0.150	0.016
	Beryllium, total (mg/L)		0.0001		< 0.0001	< 0.0001	< 0.0001
	Bismuth, total (mg/L)		< 0.0001		< 0.0001	< 0.0001	< 0.0001
	Boron, total (mg/L)		4.90		0.025	0.016	0.106
	Cadmium, total (mg/L)		0.00048		< 0.00001	< 0.00001	< 0.00001
	Calcium, total (mg/L)		382		93.7	89.6	73.2
	Chromium, total (mg/L)		0.126		0.0005	0.0006	< 0.0005
	Cobalt, total (mg/L)		0.0371		< 0.00005	< 0.00005	0.00077
	Copper, total (mg/L)		0.0227		0.0015	0.0013	0.0394
	Iron, total (mg/L)		46.0		< 0.01	< 0.01	0.03
	Lead, total (mg/L)		0.0119		0.0001	< 0.0001	0.0002
	Lithium, total (mg/L)		0.238		0.0020	0.0013	0.0192
	Magnesium, total (mg/L)		276		39.6	26.8	80.5
	Manganese, total (mg/L)		1.41		< 0.0002	0.0007	0.0017
	Mercury, total (mg/L)		0.00004		< 0.00002	< 0.00002	< 0.00002
	Molybdenum, total (mg/L)		0.0061		0.0002	0.0003	0.0014
	Nickel, total (mg/L)		0.190		< 0.0002	0.0002	0.0017
	Phosphorus, total (mg/L)		13.1		< 0.05	< 0.05	< 0.05
	Potassium, total (mg/L)		852		1.85	0.93	4.15
	Selenium, total (mg/L)		0.0007		< 0.0005	< 0.0005	0.0006
	Silicon, total (mg/L)		29.8		4.7	4.3	7.3
	Silver, total (mg/L)		0.00015		< 0.00005	< 0.00005	< 0.00005
	Sodium, total (mg/L)		1460		52.7	17.1	21.1
	Strontium, total (mg/L)		2.40		0.446	0.294	2.30
	Sulfur, total (mg/L)		31		12	6	46
	Tellurium, total (mg/L)		< 0.0002		< 0.0002	< 0.0002	< 0.0002
	Thallium, total (mg/L)		< 0.00002		< 0.00002	< 0.00002	< 0.00002

REPORTED TO Western Water Associates Ltd
PROJECT CSRD Refuse Disposal - Golden MR17006

WORK ORDER 7040434
REPORTED 2017-04-13

		7040434-01	7040434-02	7040434-03	7040434-04	7040434-05	7040434-06
		Water	**Water**	**Water**	**Water**	**Water**	**Water**
		2017-04-05	**2017-04-05**	**2017-04-05**	**2017-04-05**	**2017-04-05**	**2017-04-05**
		Runoff 1	**Runoff 2**	**MW6-S**	**Town Well #4**	**Town Well #6**	**DMW - 4**
Total Metals	Thorium, total (mg/L)		0.0004		< 0.0001	< 0.0001	< 0.0001
	Tin, total (mg/L)		0.0093		< 0.0002	< 0.0002	< 0.0002
	Titanium, total (mg/L)		0.069		< 0.005	< 0.005	< 0.005
	Uranium, total (mg/L)		0.00069		0.00124	0.00109	0.00225
	Vanadium, total (mg/L)		0.011		< 0.001	< 0.001	< 0.001
	Zinc, total (mg/L)		0.576		< 0.004	0.004	0.024
	Zirconium, total (mg/L)		0.0071		< 0.0001	< 0.0001	0.0004
Volatile Organic Compounds (VOC)	Benzene (ug/L)		1.1	< 0.5	< 0.5	< 0.5	< 0.5
	Bromodichloromethane (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Bromoform (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Carbon tetrachloride (ug/L)		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Chlorobenzene (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Chloroethane (ug/L)		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
	Chloroform (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Dibromochloromethane (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,2-Dibromoethane (ug/L)		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	Dibromomethane (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,2-Dichlorobenzene (ug/L)		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	1,3-Dichlorobenzene (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,4-Dichlorobenzene (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,1-Dichloroethane (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,2-Dichloroethane (ug/L)		1.9	< 1.0	< 1.0	< 1.0	< 1.0
	1,1-Dichloroethylene (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	cis-1,2-Dichloroethylene (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	trans-1,2-Dichloroethylene (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,2-Dichloropropane (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,3-Dichloropropene (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Ethylbenzene (ug/L)		2.8	< 1.0	< 1.0	< 1.0	< 1.0
	Methyl tert-butyl ether (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Dichloromethane (ug/L)		< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
	Styrene (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,1,2,2-Tetrachloroethane (ug/L)		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Tetrachloroethylene (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Toluene (ug/L)		104	6.6	< 1.0	< 1.0	< 1.0
	1,1,1-Trichloroethane (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,1,2-Trichloroethane (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Trichloroethylene (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Trichlorofluoromethane (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Vinyl chloride (ug/L)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Xylenes (total) (ug/L)		6.7	< 2.0	< 2.0	< 2.0	< 2.0
	Sur: Toluene-d8 (%)		85	81	81	79	82
	Sur: 4-Bromofluorobenzene (%)		108	99	102	97	102
	Sur: 1,4-Dichlorobenzene-d4 (%)		111	77	78	72	77

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

		7040434-07
		Water
		2017-04-05
		DMW - 1b
Anions	Bromide (mg/L)	< 0.10
	Chloride (mg/L)	42.1
	Fluoride (mg/L)	1.25
	Nitrate (as N) (mg/L)	< 0.010
	Nitrite (as N) (mg/L)	< 0.010
	Sulfate (mg/L)	126
General Parameters	Alkalinity, Total (as CaCO3) (mg/L)	504
	Alkalinity, Phenolphthalein (as CaCO3) (mg/	< 1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	504
	Alkalinity, Carbonate (as CaCO3) (mg/L)	< 1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	< 1.0
	Bicarbonate (HCO3) (mg/L)	614
	Carbonate (CO3) (mg/L)	< 0.600
	Hydroxide (OH) (mg/L)	< 0.340
	Ammonia, Total (as N) (mg/L)	0.239
	Conductivity (EC) (uS/cm)	1140
	pH (pH units)	7.67
	Solids, Total Suspended (mg/L)	< 2
	Turbidity (NTU)	2.40
Calculated Parameters	Hardness, Total (as CaCO3) (mg/L)	676
Total Metals	Aluminum, total (mg/L)	0.005
	Antimony, total (mg/L)	0.0003
	Arsenic, total (mg/L)	0.0326
	Barium, total (mg/L)	0.025
	Beryllium, total (mg/L)	< 0.0001
	Bismuth, total (mg/L)	< 0.0001
	Boron, total (mg/L)	0.137
	Cadmium, total (mg/L)	< 0.00001
	Calcium, total (mg/L)	77.3
	Chromium, total (mg/L)	< 0.0005
	Cobalt, total (mg/L)	0.00050
	Copper, total (mg/L)	0.0079
	Iron, total (mg/L)	0.43
	Lead, total (mg/L)	0.0002
	Lithium, total (mg/L)	0.0236
	Magnesium, total (mg/L)	117
	Manganese, total (mg/L)	0.0110
	Mercury, total (mg/L)	< 0.00002
	Molybdenum, total (mg/L)	0.0003
	Nickel, total (mg/L)	0.0020
	Phosphorus, total (mg/L)	< 0.05
	Potassium, total (mg/L)	4.73
	Selenium, total (mg/L)	< 0.0005
	Silicon, total (mg/L)	7.5

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

		7040434-07
		Water
		2017-04-05
		DMW - 1b
Total Metals	Silver, total (mg/L)	< 0.00005
	Sodium, total (mg/L)	26.3
	Strontium, total (mg/L)	1.78
	Sulfur, total (mg/L)	43
	Tellurium, total (mg/L)	< 0.0002
	Thallium, total (mg/L)	< 0.00002
	Thorium, total (mg/L)	< 0.0001
	Tin, total (mg/L)	< 0.0002
	Titanium, total (mg/L)	< 0.005
	Uranium, total (mg/L)	0.00020
	Vanadium, total (mg/L)	< 0.001
	Zinc, total (mg/L)	0.017
	Zirconium, total (mg/L)	0.0012
Volatile Organic Compounds (VOC)	Benzene (ug/L)	< 0.5
	Bromodichloromethane (ug/L)	< 1.0
	Bromoform (ug/L)	< 1.0
	Carbon tetrachloride (ug/L)	< 0.5
	Chlorobenzene (ug/L)	< 1.0
	Chloroethane (ug/L)	< 2.0
	Chloroform (ug/L)	< 1.0
	Dibromochloromethane (ug/L)	< 1.0
	1,2-Dibromoethane (ug/L)	< 0.2
	Dibromomethane (ug/L)	< 1.0
	1,2-Dichlorobenzene (ug/L)	< 0.5
	1,3-Dichlorobenzene (ug/L)	< 1.0
	1,4-Dichlorobenzene (ug/L)	< 1.0
	1,1-Dichloroethane (ug/L)	< 1.0
	1,2-Dichloroethane (ug/L)	< 1.0
	1,1-Dichloroethylene (ug/L)	< 1.0
	cis-1,2-Dichloroethylene (ug/L)	< 1.0
	trans-1,2-Dichloroethylene (ug/L)	< 1.0
	1,2-Dichloropropane (ug/L)	< 1.0
	1,3-Dichloropropene (ug/L)	< 1.0
	Ethylbenzene (ug/L)	< 1.0
	Methyl tert-butyl ether (ug/L)	< 1.0
	Dichloromethane (ug/L)	< 3.0
	Styrene (ug/L)	< 1.0
	1,1,2,2-Tetrachloroethane (ug/L)	< 0.5
	Tetrachloroethylene (ug/L)	< 1.0
	Toluene (ug/L)	< 1.0
	1,1,1-Trichloroethane (ug/L)	< 1.0
	1,1,2-Trichloroethane (ug/L)	< 1.0
	Trichloroethylene (ug/L)	< 1.0
	Trichlorofluoromethane (ug/L)	< 1.0
	Vinyl chloride (ug/L)	< 1.0

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7040434
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-04-13

		7040434-07
		Water
		2017-04-05
		DMW - 1b
Volatile Organic Compounds (VOC)	Xylenes (total) (ug/L)	< 2.0
	Sur: Toluene-d8 (%)	79
	Sur: 4-Bromofluorobenzene (%)	97
	Sur: 1,4-Dichlorobenzene-d4 (%)	70

CERTIFICATE OF ANALYSIS

REPORTED TO	Western Water Associates Ltd 106 - 5145 26th Street Vernon, BC V1T 8G4		
ATTENTION	Bryer Manwell	**WORK ORDER**	7111886
PO NUMBER	14-024-16	**RECEIVED / TEMP**	2017-11-22 10:45 / 3°C
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59
PROJECT INFO		**COC NUMBER**	B 58240

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at sgulenchyn@caro.ca

Authorized By:

Sara Gulenchyn, B.Sc, P.Chem.
Client Service Manager

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Analyzed	Qualifier
MW09-6S (7111886-01) | Matrix: Waste Water | Sampled: 2017-11-20 15:00					FILT, PRES
Anions					
Bromide	**2.84**	0.10	mg/L	2017-11-24	
Chloride	**417**	0.10	mg/L	2017-11-24	
Fluoride	**0.51**	0.10	mg/L	2017-11-24	
Nitrate (as N)	**32.6**	0.010	mg/L	2017-11-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2017-11-24	
Sulfate	**663**	1.0	mg/L	2017-11-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**929**	1.0	mg/L	2017-11-27	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2017-11-27	
Alkalinity, Bicarbonate (as CaCO3)	**929**	1.0	mg/L	2017-11-27	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2017-11-27	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2017-11-27	
Bicarbonate (HCO3)	**1130**	1.22	mg/L	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	
Ammonia, Total (as N)	**1.17**	0.020	mg/L	2017-11-24	
Conductivity (EC)	**4190**	2.0	µS/cm	2017-11-27	
pH	**7.51**	0.10	pH units	2017-11-24	HT2
Solids, Total Suspended	**437**	2.0	mg/L	2017-11-23	
Turbidity	**387**	0.10	NTU	2017-11-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	**1520**	0.500	mg/L	N/A	
Dissolved Metals					
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2017-11-27	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2017-11-27	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2017-11-27	
Barium, dissolved	**0.0500**	0.0050	mg/L	2017-11-27	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2017-11-27	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2017-11-27	
Boron, dissolved	**1.57**	0.0050	mg/L	2017-11-27	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2017-11-27	
Calcium, dissolved	**167**	0.20	mg/L	2017-11-27	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2017-11-27	
Cobalt, dissolved	**0.00164**	0.00010	mg/L	2017-11-27	
Copper, dissolved	**0.00211**	0.00040	mg/L	2017-11-27	
Iron, dissolved	< 0.010	0.010	mg/L	2017-11-27	
Lead, dissolved	< 0.00020	0.00020	mg/L	2017-11-27	
Lithium, dissolved	**0.0420**	0.00010	mg/L	2017-11-27	
Magnesium, dissolved	**267**	0.010	mg/L	2017-11-27	
Manganese, dissolved	**0.0697**	0.00020	mg/L	2017-11-27	

TEST RESULTS

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PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Analyzed	Qualifier
MW09-6S (7111886-01) | Matrix: Waste Water | Sampled: 2017-11-20 15:00, Continued					FILT, PRES
Dissolved Metals, Continued					
Mercury, dissolved	**0.000041**	0.000040	mg/L	2017-11-27	CT5
Molybdenum, dissolved	**0.00032**	0.00010	mg/L	2017-11-27	
Nickel, dissolved	**0.0116**	0.00040	mg/L	2017-11-27	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2017-11-27	
Potassium, dissolved	**184**	0.10	mg/L	2017-11-27	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2017-11-27	
Silicon, dissolved	**11.2**	1.0	mg/L	2017-11-27	
Silver, dissolved	< 0.000050	0.000050	mg/L	2017-11-27	
Sodium, dissolved	**285**	0.10	mg/L	2017-11-27	
Strontium, dissolved	**1.73**	0.0010	mg/L	2017-11-27	
Sulfur, dissolved	**273**	3.0	mg/L	2017-11-27	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2017-11-27	
Thallium, dissolved	**0.000058**	0.000020	mg/L	2017-11-27	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2017-11-27	
Tin, dissolved	**0.00023**	0.00020	mg/L	2017-11-27	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2017-11-27	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2017-11-27	
Uranium, dissolved	**0.00796**	0.000020	mg/L	2017-11-27	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2017-11-27	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2017-11-27	
Zirconium, dissolved	**0.00012**	0.00010	mg/L	2017-11-27	
Town Well #6 (7111886-02) | Matrix: Waste Water | Sampled: 2017-11-20 13:00					
Anions					
Bromide	< 0.10	0.10	mg/L	2017-11-24	
Chloride	**36.2**	0.10	mg/L	2017-11-24	
Fluoride	**0.18**	0.10	mg/L	2017-11-24	
Nitrate (as N)	**1.30**	0.010	mg/L	2017-11-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2017-11-24	
Sulfate	**23.0**	1.0	mg/L	2017-11-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**304**	1.0	mg/L	2017-11-26	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2017-11-26	
Alkalinity, Bicarbonate (as CaCO3)	**304**	1.0	mg/L	2017-11-26	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2017-11-26	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2017-11-26	
Bicarbonate (HCO3)	**371**	1.22	mg/L	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	
Ammonia, Total (as N)	**0.028**	0.020	mg/L	2017-11-24	

TEST RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Analyzed	Qualifier
Town Well #6 (7111886-02) | Matrix: Waste Water | Sampled: 2017-11-20 13:00, Continued					
General Parameters, Continued					
Conductivity (EC)	**704**	2.0	µS/cm	2017-11-26	
pH	**8.00**	0.10	pH units	2017-11-24	HT2
Solids, Total Suspended	**8.6**	2.0	mg/L	2017-11-23	
Turbidity	**0.10**	0.10	NTU	2017-11-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	**308**	0.500	mg/L	N/A	
Total Metals					
Aluminum, total	< 0.0050	0.0050	mg/L	2017-11-27	
Antimony, total	< 0.00020	0.00020	mg/L	2017-11-27	
Arsenic, total	< 0.00050	0.00050	mg/L	2017-11-27	
Barium, total	**0.146**	0.0050	mg/L	2017-11-27	
Beryllium, total	< 0.00010	0.00010	mg/L	2017-11-27	
Bismuth, total	< 0.00010	0.00010	mg/L	2017-11-27	
Boron, total	**0.0068**	0.0050	mg/L	2017-11-27	
Cadmium, total	< 0.000010	0.000010	mg/L	2017-11-27	
Calcium, total	**83.6**	0.20	mg/L	2017-11-27	
Chromium, total	**0.00062**	0.00050	mg/L	2017-11-27	
Cobalt, total	< 0.00010	0.00010	mg/L	2017-11-27	
Copper, total	**0.00153**	0.00040	mg/L	2017-11-27	
Iron, total	< 0.010	0.010	mg/L	2017-11-27	
Lead, total	< 0.00020	0.00020	mg/L	2017-11-27	
Lithium, total	**0.00115**	0.00010	mg/L	2017-11-27	
Magnesium, total	**24.0**	0.010	mg/L	2017-11-27	
Manganese, total	**0.00077**	0.00020	mg/L	2017-11-27	
Mercury, total	< 0.000010	0.000010	mg/L	2017-11-27	
Molybdenum, total	**0.00026**	0.00010	mg/L	2017-11-27	
Nickel, total	< 0.00040	0.00040	mg/L	2017-11-27	
Phosphorus, total	< 0.050	0.050	mg/L	2017-11-27	
Potassium, total	**0.91**	0.10	mg/L	2017-11-27	
Selenium, total	< 0.00050	0.00050	mg/L	2017-11-27	
Silicon, total	**3.7**	1.0	mg/L	2017-11-27	
Silver, total	< 0.000050	0.000050	mg/L	2017-11-27	
Sodium, total	**15.7**	0.10	mg/L	2017-11-27	
Strontium, total	**0.285**	0.0010	mg/L	2017-11-27	
Sulfur, total	**7.9**	3.0	mg/L	2017-11-27	
Tellurium, total	< 0.00050	0.00050	mg/L	2017-11-27	
Thallium, total	< 0.000020	0.000020	mg/L	2017-11-27	
Thorium, total	< 0.00010	0.00010	mg/L	2017-11-27	
Tin, total	< 0.00020	0.00020	mg/L	2017-11-27	
Titanium, total	< 0.0050	0.0050	mg/L	2017-11-27	
Tungsten, total	< 0.0010	0.0010	mg/L	2017-11-27	

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TEST RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Analyzed	Qualifier
Town Well #6 (7111886-02) | Matrix: Waste Water | Sampled: 2017-11-20 13:00, Continued					
Total Metals, Continued					
Uranium, total	**0.00107**	0.000020	mg/L	2017-11-27	
Vanadium, total	< 0.0010	0.0010	mg/L	2017-11-27	
Zinc, total	< 0.0040	0.0040	mg/L	2017-11-27	
Zirconium, total	< 0.00010	0.00010	mg/L	2017-11-27	
Town Well #4 (7111886-03) | Matrix: Waste Water | Sampled: 2017-11-20 14:00					
Anions					
Bromide	< 0.10	0.10	mg/L	2017-11-24	
Chloride	**105**	0.10	mg/L	2017-11-24	
Fluoride	< 0.10	0.10	mg/L	2017-11-24	
Nitrate (as N)	**1.61**	0.010	mg/L	2017-11-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2017-11-24	
Phosphate (as P)	< 0.010	0.010	mg/L	2017-11-24	
Sulfate	**43.8**	1.0	mg/L	2017-11-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**361**	1.0	mg/L	2017-11-26	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2017-11-26	
Alkalinity, Bicarbonate (as CaCO3)	**361**	1.0	mg/L	2017-11-26	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2017-11-26	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2017-11-26	
Bicarbonate (HCO3)	**441**	1.22	mg/L	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	
Ammonia, Total (as N)	**0.024**	0.020	mg/L	2017-11-24	
Conductivity (EC)	**1050**	2.0	µS/cm	2017-11-26	
pH	**7.91**	0.10	pH units	2017-11-24	HT2
Solids, Total Suspended	< 2.0	2.0	mg/L	2017-11-23	
Turbidity	**0.26**	0.10	NTU	2017-11-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	**389**	0.500	mg/L	N/A	
Total Metals					
Aluminum, total	< 0.0050	0.0050	mg/L	2017-11-27	
Antimony, total	< 0.00020	0.00020	mg/L	2017-11-27	
Arsenic, total	< 0.00050	0.00050	mg/L	2017-11-27	
Barium, total	**0.228**	0.0050	mg/L	2017-11-27	
Beryllium, total	< 0.00010	0.00010	mg/L	2017-11-27	
Bismuth, total	< 0.00010	0.00010	mg/L	2017-11-27	
Boron, total	**0.0140**	0.0050	mg/L	2017-11-27	
Cadmium, total	< 0.000010	0.000010	mg/L	2017-11-27	

TEST RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Analyzed	Qualifier
Town Well #4 (7111886-03) | Matrix: Waste Water | Sampled: 2017-11-20 14:00, Continued					
Total Metals, Continued					
Calcium, total	**91.1**	0.20	mg/L	2017-11-27	
Chromium, total	**0.00052**	0.00050	mg/L	2017-11-27	
Cobalt, total	< 0.00010	0.00010	mg/L	2017-11-27	
Copper, total	**0.00073**	0.00040	mg/L	2017-11-27	
Iron, total	< 0.010	0.010	mg/L	2017-11-27	
Lead, total	< 0.00020	0.00020	mg/L	2017-11-27	
Lithium, total	**0.00199**	0.00010	mg/L	2017-11-27	
Magnesium, total	**39.2**	0.010	mg/L	2017-11-27	
Manganese, total	< 0.00020	0.00020	mg/L	2017-11-27	
Mercury, total	< 0.000010	0.000010	mg/L	2017-11-27	
Molybdenum, total	**0.00019**	0.00010	mg/L	2017-11-27	
Nickel, total	< 0.00040	0.00040	mg/L	2017-11-27	
Phosphorus, total	< 0.050	0.050	mg/L	2017-11-27	
Potassium, total	**1.89**	0.10	mg/L	2017-11-27	
Selenium, total	< 0.00050	0.00050	mg/L	2017-11-27	
Silicon, total	**4.4**	1.0	mg/L	2017-11-27	
Silver, total	< 0.000050	0.000050	mg/L	2017-11-27	
Sodium, total	**52.1**	0.10	mg/L	2017-11-27	
Strontium, total	**0.486**	0.0010	mg/L	2017-11-27	
Sulfur, total	**14.0**	3.0	mg/L	2017-11-27	
Tellurium, total	< 0.00050	0.00050	mg/L	2017-11-27	
Thallium, total	< 0.000020	0.000020	mg/L	2017-11-27	
Thorium, total	< 0.00010	0.00010	mg/L	2017-11-27	
Tin, total	< 0.00020	0.00020	mg/L	2017-11-27	
Titanium, total	< 0.0050	0.0050	mg/L	2017-11-27	
Tungsten, total	< 0.0010	0.0010	mg/L	2017-11-27	
Uranium, total	**0.00127**	0.000020	mg/L	2017-11-27	
Vanadium, total	< 0.0010	0.0010	mg/L	2017-11-27	
Zinc, total	< 0.0040	0.0040	mg/L	2017-11-27	
Zirconium, total	< 0.00010	0.00010	mg/L	2017-11-27	
DMW-1B (7111886-05) | Matrix: Water | Sampled: 2017-11-20 16:00					
Anions					
Bromide	< 0.10	0.10	mg/L	2017-11-24	
Chloride	**52.8**	0.10	mg/L	2017-11-24	
Fluoride	**1.30**	0.10	mg/L	2017-11-24	
Nitrate (as N)	< 0.010	0.010	mg/L	2017-11-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2017-11-24	
Sulfate	**108**	1.0	mg/L	2017-11-24	
General Parameters					

TEST RESULTS

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PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Analyzed	Qualifier
DMW-1B (7111886-05) | Matrix: Water | Sampled: 2017-11-20 16:00, Continued					
General Parameters, Continued					
Alkalinity, Total (as CaCO3)	**481**	1.0	mg/L	2017-11-26	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2017-11-26	
Alkalinity, Bicarbonate (as CaCO3)	**481**	1.0	mg/L	2017-11-26	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2017-11-26	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2017-11-26	
Bicarbonate (HCO3)	**587**	1.22	mg/L	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	
Ammonia, Total (as N)	**0.262**	0.020	mg/L	2017-11-24	
Conductivity (EC)	**1170**	2.0	µS/cm	2017-11-26	
pH	**7.86**	0.10	pH units	2017-11-24	HT2
Solids, Total Suspended	**2.8**	2.0	mg/L	2017-11-23	
Turbidity	**5.34**	0.10	NTU	2017-11-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	**582**	0.500	mg/L	N/A	
Total Metals					
Aluminum, total	< 0.0050	0.0050	mg/L	2017-11-27	
Antimony, total	< 0.00020	0.00020	mg/L	2017-11-27	
Arsenic, total	**0.0476**	0.00050	mg/L	2017-11-27	
Barium, total	**0.0246**	0.0050	mg/L	2017-11-27	
Beryllium, total	**0.00011**	0.00010	mg/L	2017-11-27	
Bismuth, total	< 0.00010	0.00010	mg/L	2017-11-27	
Boron, total	**0.101**	0.0050	mg/L	2017-11-27	
Cadmium, total	< 0.000010	0.000010	mg/L	2017-11-27	
Calcium, total	**65.9**	0.20	mg/L	2017-11-27	
Chromium, total	< 0.00050	0.00050	mg/L	2017-11-27	
Cobalt, total	< 0.00010	0.00010	mg/L	2017-11-27	
Copper, total	**0.00073**	0.00040	mg/L	2017-11-27	
Iron, total	**0.437**	0.010	mg/L	2017-11-27	
Lead, total	< 0.00020	0.00020	mg/L	2017-11-27	
Lithium, total	**0.0217**	0.00010	mg/L	2017-11-27	
Magnesium, total	**101**	0.010	mg/L	2017-11-27	
Manganese, total	**0.00419**	0.00020	mg/L	2017-11-27	
Mercury, total	< 0.000010	0.000010	mg/L	2017-11-27	
Molybdenum, total	**0.00035**	0.00010	mg/L	2017-11-27	
Nickel, total	**0.00204**	0.00040	mg/L	2017-11-27	
Phosphorus, total	< 0.050	0.050	mg/L	2017-11-27	
Potassium, total	**4.63**	0.10	mg/L	2017-11-27	
Selenium, total	< 0.00050	0.00050	mg/L	2017-11-27	
Silicon, total	**7.6**	1.0	mg/L	2017-11-27	
Silver, total	< 0.000050	0.000050	mg/L	2017-11-27	

TEST RESULTS

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PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Analyzed	Qualifier
DMW-1B (7111886-05) | Matrix: Water | Sampled: 2017-11-20 16:00, Continued					
Total Metals, Continued					
Sodium, total	**26.9**	0.10	mg/L	2017-11-27	
Strontium, total	**1.85**	0.0010	mg/L	2017-11-27	
Sulfur, total	**42.6**	3.0	mg/L	2017-11-27	
Tellurium, total	< 0.00050	0.00050	mg/L	2017-11-27	
Thallium, total	< 0.000020	0.000020	mg/L	2017-11-27	
Thorium, total	< 0.00010	0.00010	mg/L	2017-11-27	
Tin, total	< 0.00020	0.00020	mg/L	2017-11-27	
Titanium, total	< 0.0050	0.0050	mg/L	2017-11-27	
Tungsten, total	< 0.0010	0.0010	mg/L	2017-11-27	
Uranium, total	**0.000068**	0.000020	mg/L	2017-11-27	
Vanadium, total	< 0.0010	0.0010	mg/L	2017-11-27	
Zinc, total	**0.0084**	0.0040	mg/L	2017-11-27	
Zirconium, total	**0.00161**	0.00010	mg/L	2017-11-27	
DMW-4 (7111886-06) | Matrix: Water | Sampled: 2017-11-20 16:30					
Anions					
Bromide	< 0.10	0.10	mg/L	2017-11-24	
Chloride	**11.7**	0.10	mg/L	2017-11-24	
Fluoride	**0.79**	0.10	mg/L	2017-11-24	
Nitrate (as N)	**0.138**	0.010	mg/L	2017-11-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2017-11-24	
Sulfate	**246**	1.0	mg/L	2017-11-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**439**	1.0	mg/L	2017-11-26	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2017-11-26	
Alkalinity, Bicarbonate (as CaCO3)	**439**	1.0	mg/L	2017-11-26	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2017-11-26	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2017-11-26	
Bicarbonate (HCO3)	**536**	1.22	mg/L	N/A	
Carbonate (CO3)	< 0.600	0.600	mg/L	N/A	
Hydroxide (OH)	< 0.340	0.340	mg/L	N/A	
Ammonia, Total (as N)	**1.06**	0.020	mg/L	2017-11-24	
Conductivity (EC)	**1190**	2.0	µS/cm	2017-11-26	
pH	**7.95**	0.10	pH units	2017-11-24	HT2
Solids, Total Suspended	< 2.0	2.0	mg/L	2017-11-23	
Turbidity	**0.37**	0.10	NTU	2017-11-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	**565**	0.500	mg/L	N/A	
Total Metals					

TEST RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Analyzed	Qualifier
DMW-4 (7111886-06) | Matrix: Water | Sampled: 2017-11-20 16:30, Continued					
Total Metals, Continued					
Aluminum, total	< 0.0050	0.0050	mg/L	2017-11-27	
Antimony, total	< 0.00020	0.00020	mg/L	2017-11-27	
Arsenic, total	**0.00149**	0.00050	mg/L	2017-11-27	
Barium, total	**0.0165**	0.0050	mg/L	2017-11-27	
Beryllium, total	< 0.00010	0.00010	mg/L	2017-11-27	
Bismuth, total	< 0.00010	0.00010	mg/L	2017-11-27	
Boron, total	**0.386**	0.0050	mg/L	2017-11-27	
Cadmium, total	< 0.000010	0.000010	mg/L	2017-11-27	
Calcium, total	**76.1**	0.20	mg/L	2017-11-27	
Chromium, total	< 0.00050	0.00050	mg/L	2017-11-27	
Cobalt, total	**0.00068**	0.00010	mg/L	2017-11-27	
Copper, total	**0.00181**	0.00040	mg/L	2017-11-27	
Iron, total	**0.037**	0.010	mg/L	2017-11-27	
Lead, total	< 0.00020	0.00020	mg/L	2017-11-27	
Lithium, total	**0.0508**	0.00010	mg/L	2017-11-27	
Magnesium, total	**91.1**	0.010	mg/L	2017-11-27	
Manganese, total	**0.00377**	0.00020	mg/L	2017-11-27	
Mercury, total	< 0.000010	0.000010	mg/L	2017-11-27	
Molybdenum, total	**0.00049**	0.00010	mg/L	2017-11-27	
Nickel, total	**0.00105**	0.00040	mg/L	2017-11-27	
Phosphorus, total	< 0.050	0.050	mg/L	2017-11-27	
Potassium, total	**8.59**	0.10	mg/L	2017-11-27	
Selenium, total	< 0.00050	0.00050	mg/L	2017-11-27	
Silicon, total	**6.4**	1.0	mg/L	2017-11-27	
Silver, total	< 0.000050	0.000050	mg/L	2017-11-27	
Sodium, total	**46.4**	0.10	mg/L	2017-11-27	
Strontium, total	**5.49**	0.0010	mg/L	2017-11-27	
Sulfur, total	**88.3**	3.0	mg/L	2017-11-27	
Tellurium, total	< 0.00050	0.00050	mg/L	2017-11-27	
Thallium, total	< 0.000020	0.000020	mg/L	2017-11-27	
Thorium, total	< 0.00010	0.00010	mg/L	2017-11-27	
Tin, total	< 0.00020	0.00020	mg/L	2017-11-27	
Titanium, total	< 0.0050	0.0050	mg/L	2017-11-27	
Tungsten, total	< 0.0010	0.0010	mg/L	2017-11-27	
Uranium, total	**0.000895**	0.000020	mg/L	2017-11-27	
Vanadium, total	< 0.0010	0.0010	mg/L	2017-11-27	
Zinc, total	**0.0185**	0.0040	mg/L	2017-11-27	
Zirconium, total	**0.00058**	0.00010	mg/L	2017-11-27	

TEST RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Sample Qualifiers:

CT5	This sample has been incorrectly preserved for Mercury analysis
FILT	The sample has been filtered for DISS METALS in the laboratory. Results may not reflect conditions at the time of sampling.
HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
PRES	Sample has been preserved for DISS METALS in the laboratory and the holding time has been extended.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2011)	Titration with H2SO4	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2011)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2011)	Ion Chromatography	Kelowna
Conductivity in Water	SM 2510 B (2011)	Conductivity Meter	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
Hardness in Water	SM 2340 B (2011)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
pH in Water	SM 4500-H+ B (2011)	Electrometry	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2011)	Gravimetry (Dried at 103-105C)	Kelowna
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
Turbidity in Water	SM 2130 B (2011)	Nephelometry	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
pH units	pH < 7 = acidic, ph > 7 = basic
µS/cm	Microsiemens per centimetre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B7K1840										
Blank (B7K1840-BLK1)				Prepared: 2017-11-23, Analyzed: 2017-11-23						
Bromide	< 0.10	0.10	mg/L							
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
Blank (B7K1840-BLK2)				Prepared: 2017-11-24, Analyzed: 2017-11-24						
Bromide	< 0.10	0.10	mg/L							
Chloride	< 0.10	0.10	mg/L							
Fluoride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
LCS (B7K1840-BS1)				Prepared: 2017-11-23, Analyzed: 2017-11-23						
Bromide	3.86	0.10	mg/L	4.00		96	85-115			
Chloride	16.0	0.10	mg/L	16.0		100	90-110			
Fluoride	4.09	0.10	mg/L	4.00		102	88-108			
Nitrate (as N)	3.99	0.010	mg/L	4.00		100	93-108			
Nitrite (as N)	2.00	0.010	mg/L	2.00		100	85-114			
Phosphate (as P)	1.03	0.010	mg/L	1.00		103	80-120			
Sulfate	16.0	1.0	mg/L	16.0		100	91-109			
LCS (B7K1840-BS2)				Prepared: 2017-11-23, Analyzed: 2017-11-23						
Bromide	3.85	0.10	mg/L	4.00		96	85-115			
Chloride	16.0	0.10	mg/L	16.0		100	90-110			
Fluoride	3.94	0.10	mg/L	4.00		99	88-108			
Nitrate (as N)	3.94	0.010	mg/L	4.00		99	93-108			
Nitrite (as N)	2.03	0.010	mg/L	2.00		102	85-114			
Phosphate (as P)	1.05	0.010	mg/L	1.00		105	80-120			
Sulfate	16.1	1.0	mg/L	16.0		100	91-109			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B7K1990, Continued										
Reference (B7K1990-SRM1), Continued				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Lead, total	0.191	0.00020	mg/L	0.204		93	90-110			
Lithium, total	0.365	0.00010	mg/L	0.403		91	79-118			
Magnesium, total	3.46	0.010	mg/L	3.79		91	88-116			
Manganese, total	0.103	0.00020	mg/L	0.109		95	88-108			
Molybdenum, total	0.187	0.00010	mg/L	0.198		94	88-110			
Nickel, total	0.240	0.00040	mg/L	0.249		97	90-112			
Phosphorus, total	0.191	0.050	mg/L	0.227		84	72-118			
Potassium, total	6.45	0.10	mg/L	7.21		89	87-116			
Selenium, total	0.125	0.00050	mg/L	0.121		104	90-122			
Sodium, total	6.54	0.10	mg/L	7.54		87	86-118			
Strontium, total	0.367	0.0010	mg/L	0.375		98	86-110			
Thallium, total	0.0768	0.000020	mg/L	0.0805		95	90-113			
Uranium, total	0.0293	0.000020	mg/L	0.0306		96	88-112			
Vanadium, total	0.368	0.0010	mg/L	0.386		95	87-110			
Zinc, total	2.42	0.0040	mg/L	2.49		97	90-113			
Total Metals, Batch B7K2030										
Blank (B7K2030-BLK1)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Mercury, total	< 0.000010	0.000010	mg/L							
Reference (B7K2030-SRM1)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Mercury, total	0.00454	0.000010	mg/L	0.00489		93	80-120			

QC Qualifiers:

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B7K2014										
Blank (B7K2014-BLK1)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0050	0.0050	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Mercury, dissolved	< 0.000040	0.000040	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
LCS (B7K2014-BS1)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Aluminum, dissolved	0.0222	0.0050	mg/L	0.0200		111	80-120			
Antimony, dissolved	0.0190	0.00020	mg/L	0.0200		95	80-120			
Arsenic, dissolved	0.0185	0.00050	mg/L	0.0200		93	80-120			
Barium, dissolved	0.0188	0.0050	mg/L	0.0200		94	80-120			
Beryllium, dissolved	0.0179	0.00010	mg/L	0.0200		89	80-120			
Bismuth, dissolved	0.0192	0.00010	mg/L	0.0200		96	80-120			
Boron, dissolved	0.0173	0.0050	mg/L	0.0200		86	80-120			
Cadmium, dissolved	0.0192	0.000010	mg/L	0.0200		96	80-120			
Calcium, dissolved	1.89	0.20	mg/L	2.00		95	80-120			
Chromium, dissolved	0.0183	0.00050	mg/L	0.0200		92	80-120			
Cobalt, dissolved	0.0181	0.00010	mg/L	0.0200		90	80-120			
Copper, dissolved	0.0191	0.00040	mg/L	0.0200		96	80-120			
Iron, dissolved	1.77	0.010	mg/L	2.00		88	80-120			
Lead, dissolved	0.0190	0.00020	mg/L	0.0200		95	80-120			
Lithium, dissolved	0.0180	0.00010	mg/L	0.0200		90	80-120			
Magnesium, dissolved	1.83	0.010	mg/L	2.00		92	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B7K2014, Continued										
LCS (B7K2014-BS1), Continued				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Manganese, dissolved	0.0181	0.00020	mg/L	0.0200		90	80-120			
Mercury, dissolved	0.000898	0.000040	mg/L	0.00100		90	80-120			
Molybdenum, dissolved	0.0178	0.00010	mg/L	0.0200		89	80-120			
Nickel, dissolved	0.0184	0.00040	mg/L	0.0200		92	80-120			
Phosphorus, dissolved	1.75	0.050	mg/L	2.00		87	80-120			
Potassium, dissolved	1.87	0.10	mg/L	2.00		93	80-120			
Selenium, dissolved	0.0190	0.00050	mg/L	0.0200		95	80-120			
Silicon, dissolved	1.9	1.0	mg/L	2.00		93	80-120			
Silver, dissolved	0.0189	0.000050	mg/L	0.0200		94	80-120			
Sodium, dissolved	1.93	0.10	mg/L	2.40		80	80-120			
Strontium, dissolved	0.0185	0.0010	mg/L	0.0200		93	80-120			
Sulfur, dissolved	4.9	3.0	mg/L	5.00		98	80-120			
Tellurium, dissolved	0.0179	0.00050	mg/L	0.0200		90	80-120			
Thallium, dissolved	0.0190	0.000020	mg/L	0.0200		95	80-120			
Thorium, dissolved	0.0183	0.00010	mg/L	0.0200		92	80-120			
Tin, dissolved	0.0194	0.00020	mg/L	0.0200		97	80-120			
Titanium, dissolved	0.0182	0.0050	mg/L	0.0200		91	80-120			
Tungsten, dissolved	0.0167	0.0010	mg/L	0.0200		83	80-120			
Uranium, dissolved	0.0196	0.000020	mg/L	0.0200		98	80-120			
Vanadium, dissolved	0.0177	0.0010	mg/L	0.0200		89	80-120			
Zinc, dissolved	0.0198	0.0040	mg/L	0.0200		99	80-120			
Zirconium, dissolved	0.0183	0.00010	mg/L	0.0200		92	80-120			
Reference (B7K2014-SRM1)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Aluminum, dissolved	0.222	0.0050	mg/L	0.233		95	79-114			
Antimony, dissolved	0.0464	0.00020	mg/L	0.0430		108	89-123			
Arsenic, dissolved	0.448	0.00050	mg/L	0.438		102	87-113			
Barium, dissolved	3.48	0.0050	mg/L	3.35		104	85-114			
Beryllium, dissolved	0.209	0.00010	mg/L	0.213		98	79-122			
Boron, dissolved	1.51	0.0050	mg/L	1.74		87	79-117			
Cadmium, dissolved	0.233	0.000010	mg/L	0.224		104	89-112			
Calcium, dissolved	7.76	0.20	mg/L	7.69		101	85-120			
Chromium, dissolved	0.432	0.00050	mg/L	0.437		99	87-113			
Cobalt, dissolved	0.128	0.00010	mg/L	0.128		100	90-117			
Copper, dissolved	0.848	0.00040	mg/L	0.844		100	90-115			
Iron, dissolved	1.21	0.010	mg/L	1.29		94	86-112			
Lead, dissolved	0.112	0.00020	mg/L	0.112		100	90-113			
Lithium, dissolved	0.102	0.00010	mg/L	0.104		98	77-127			
Magnesium, dissolved	6.29	0.010	mg/L	6.92		91	84-116			
Manganese, dissolved	0.342	0.00020	mg/L	0.345		99	85-113			
Molybdenum, dissolved	0.420	0.00010	mg/L	0.426		99	87-112			
Nickel, dissolved	0.844	0.00040	mg/L	0.840		101	90-114			
Phosphorus, dissolved	0.488	0.050	mg/L	0.495		99	74-119			
Potassium, dissolved	2.98	0.10	mg/L	3.19		93	78-119			
Selenium, dissolved	0.0343	0.00050	mg/L	0.0331		104	89-123			
Sodium, dissolved	16.4	0.10	mg/L	19.1		86	81-117			
Strontium, dissolved	0.911	0.0010	mg/L	0.916		99	82-111			
Thallium, dissolved	0.0401	0.000020	mg/L	0.0393		102	90-113			
Uranium, dissolved	0.264	0.000020	mg/L	0.266		99	87-113			
Vanadium, dissolved	0.833	0.0010	mg/L	0.869		96	85-110			
Zinc, dissolved	0.890	0.0040	mg/L	0.881		101	88-114			
General Parameters, Batch B7K1777										

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B7K1777, Continued										
Blank (B7K1777-BLK1)				Prepared: 2017-11-23, Analyzed: 2017-11-23						
Solids, Total Suspended	< 1.0	1.0	mg/L							
Blank (B7K1777-BLK2)				Prepared: 2017-11-23, Analyzed: 2017-11-23						
Solids, Total Suspended	< 1.0	1.0	mg/L							
LCS (B7K1777-BS1)				Prepared: 2017-11-23, Analyzed: 2017-11-23						
Solids, Total Suspended	95.0	10.0	mg/L	100		95	91-106			
LCS (B7K1777-BS2)				Prepared: 2017-11-23, Analyzed: 2017-11-23						
Solids, Total Suspended	94.0	10.0	mg/L	100		94	91-106			
General Parameters, Batch B7K1779										
Blank (B7K1779-BLK1)				Prepared: 2017-11-23, Analyzed: 2017-11-23						
Turbidity	< 0.10	0.10	NTU							
Blank (B7K1779-BLK2)				Prepared: 2017-11-23, Analyzed: 2017-11-23						
Turbidity	< 0.10	0.10	NTU							
LCS (B7K1779-BS1)				Prepared: 2017-11-23, Analyzed: 2017-11-23						
Turbidity	40.0	0.10	NTU	40.0		100	90-110			
LCS (B7K1779-BS2)				Prepared: 2017-11-23, Analyzed: 2017-11-23						
Turbidity	39.8	0.10	NTU	40.0		100	90-110			
General Parameters, Batch B7K1849										
Blank (B7K1849-BLK1)				Prepared: 2017-11-24, Analyzed: 2017-11-24						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B7K1849-BLK2)				Prepared: 2017-11-24, Analyzed: 2017-11-24						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B7K1849-BLK3)				Prepared: 2017-11-24, Analyzed: 2017-11-24						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
LCS (B7K1849-BS1)				Prepared: 2017-11-24, Analyzed: 2017-11-24						
Ammonia, Total (as N)	1.04	0.020	mg/L	1.00		104	90-115			
LCS (B7K1849-BS2)				Prepared: 2017-11-24, Analyzed: 2017-11-24						
Ammonia, Total (as N)	0.998	0.020	mg/L	1.00		100	90-115			
LCS (B7K1849-BS3)				Prepared: 2017-11-24, Analyzed: 2017-11-24						
Ammonia, Total (as N)	1.09	0.020	mg/L	1.00		109	90-115			
Duplicate (B7K1849-DUP2)		**Source: 7111886-02**		Prepared: 2017-11-24, Analyzed: 2017-11-24						
Ammonia, Total (as N)	0.029	0.020	mg/L		0.028				15	
Matrix Spike (B7K1849-MS2)		**Source: 7111886-02**		Prepared: 2017-11-24, Analyzed: 2017-11-24						
Ammonia, Total (as N)	0.285	0.020	mg/L	0.250	0.028	103	75-125			
General Parameters, Batch B7K1887										
Reference (B7K1887-SRM1)				Prepared: 2017-11-24, Analyzed: 2017-11-24						
pH	7.00	0.10	pH units	7.00		100	98-102			HT2

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B7K1887, Continued										
Reference (B7K1887-SRM2)				Prepared: 2017-11-24, Analyzed: 2017-11-24						
pH	7.00	0.10	pH units	7.00		100	98-102			HT2
General Parameters, Batch B7K1983										
Blank (B7K1983-BLK1)				Prepared: 2017-11-26, Analyzed: 2017-11-26						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B7K1983-BLK2)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B7K1983-BLK3)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B7K1983-BS1)				Prepared: 2017-11-26, Analyzed: 2017-11-26						
Alkalinity, Total (as CaCO3)	100	1.0	mg/L	100		100	92-106			
LCS (B7K1983-BS2)				Prepared: 2017-11-26, Analyzed: 2017-11-26						
Conductivity (EC)	1400	2.0	µS/cm	1410		99	95-104			
LCS (B7K1983-BS3)				Prepared: 2017-11-26, Analyzed: 2017-11-26						
Alkalinity, Total (as CaCO3)	103	1.0	mg/L	100		103	92-106			
LCS (B7K1983-BS4)				Prepared: 2017-11-26, Analyzed: 2017-11-26						
Conductivity (EC)	1410	2.0	µS/cm	1410		100	95-104			
LCS (B7K1983-BS5)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Alkalinity, Total (as CaCO3)	102	1.0	mg/L	100		102	92-106			
LCS (B7K1983-BS6)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Conductivity (EC)	1420	2.0	µS/cm	1410		101	95-104			
General Parameters, Batch B7K2023										
Blank (B7K2023-BLK1)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B7K2023, Continued										
Blank (B7K2023-BLK2)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B7K2023-BS1)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Alkalinity, Total (as CaCO3)	104	1.0	mg/L	100		104	92-106			
LCS (B7K2023-BS2)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Alkalinity, Total (as CaCO3)	101	1.0	mg/L	100		101	92-106			
LCS (B7K2023-BS3)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Conductivity (EC)	1400	2.0	µS/cm	1410		99	95-104			
LCS (B7K2023-BS4)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Conductivity (EC)	1430	2.0	µS/cm	1410		101	95-104			
Total Metals, Batch B7K1990										
Blank (B7K1990-BLK1)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Western Water Associates Ltd	**WORK ORDER**	7111886
PROJECT	CSRD Refuse Disposal - Golden MR17006	**REPORTED**	2017-11-29 14:59

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B7K1990, Continued										
Blank (B7K1990-BLK1), Continued				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
LCS (B7K1990-BS1)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Aluminum, total	0.0231	0.0050	mg/L	0.0200		115	80-120			
Antimony, total	0.0206	0.00020	mg/L	0.0200		103	80-120			
Arsenic, total	0.0189	0.00050	mg/L	0.0200		94	80-120			
Barium, total	0.0188	0.0050	mg/L	0.0200		94	80-120			
Beryllium, total	0.0173	0.00010	mg/L	0.0200		87	80-120			
Bismuth, total	0.0193	0.00010	mg/L	0.0200		97	80-120			
Boron, total	0.0184	0.0050	mg/L	0.0200		92	80-120			
Cadmium, total	0.0194	0.000010	mg/L	0.0200		97	80-120			
Calcium, total	1.88	0.20	mg/L	2.00		94	80-120			
Chromium, total	0.0188	0.00050	mg/L	0.0200		94	80-120			
Cobalt, total	0.0183	0.00010	mg/L	0.0200		92	80-120			
Copper, total	0.0196	0.00040	mg/L	0.0200		98	80-120			
Iron, total	1.80	0.010	mg/L	2.00		90	80-120			
Lead, total	0.0190	0.00020	mg/L	0.0200		95	80-120			
Lithium, total	0.0173	0.00010	mg/L	0.0200		86	80-120			
Magnesium, total	1.85	0.010	mg/L	2.00		92	80-120			
Manganese, total	0.0185	0.00020	mg/L	0.0200		92	80-120			
Molybdenum, total	0.0185	0.00010	mg/L	0.0200		93	80-120			
Nickel, total	0.0186	0.00040	mg/L	0.0200		93	80-120			
Phosphorus, total	1.80	0.050	mg/L	2.00		90	80-120			
Potassium, total	1.90	0.10	mg/L	2.00		95	80-120			
Selenium, total	0.0196	0.00050	mg/L	0.0200		98	80-120			
Silicon, total	1.9	1.0	mg/L	2.00		97	80-120			
Silver, total	0.0192	0.000050	mg/L	0.0200		96	80-120			
Sodium, total	1.97	0.10	mg/L	2.40		82	80-120			
Strontium, total	0.0188	0.0010	mg/L	0.0200		94	80-120			
Sulfur, total	4.5	3.0	mg/L	5.00		89	80-120			
Tellurium, total	0.0189	0.00050	mg/L	0.0200		94	80-120			
Thallium, total	0.0190	0.000020	mg/L	0.0200		95	80-120			
Thorium, total	0.0191	0.00010	mg/L	0.0200		96	80-120			
Tin, total	0.0204	0.00020	mg/L	0.0200		102	80-120			
Titanium, total	0.0192	0.0050	mg/L	0.0200		96	80-120			
Tungsten, total	0.0205	0.0010	mg/L	0.0200		102	80-120			
Uranium, total	0.0203	0.000020	mg/L	0.0200		102	80-120			
Vanadium, total	0.0183	0.0010	mg/L	0.0200		92	80-120			
Zinc, total	0.0206	0.0040	mg/L	0.0200		103	80-120			
Zirconium, total	0.0193	0.00010	mg/L	0.0200		96	80-120			
Reference (B7K1990-SRM1)				Prepared: 2017-11-27, Analyzed: 2017-11-27						
Aluminum, total	0.282	0.0050	mg/L	0.303		93	82-114			
Antimony, total	0.0510	0.00020	mg/L	0.0511		100	88-115			
Arsenic, total	0.117	0.00050	mg/L	0.118		99	88-111			
Barium, total	0.785	0.0050	mg/L	0.823		95	83-110			
Beryllium, total	0.0451	0.00010	mg/L	0.0496		91	80-119			
Boron, total	2.79	0.0050	mg/L	3.45		81	80-118			
Cadmium, total	0.0495	0.000010	mg/L	0.0495		100	90-110			
Calcium, total	11.1	0.20	mg/L	11.6		96	85-113			
Chromium, total	0.243	0.00050	mg/L	0.250		97	88-111			
Cobalt, total	0.0371	0.00010	mg/L	0.0377		98	90-114			
Copper, total	0.485	0.00040	mg/L	0.486		100	90-117			
Iron, total	0.467	0.010	mg/L	0.488		96	90-116			

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Source Water Assessment and Protection

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