

**FINAL REPORT:
ENVIRONMENTAL
COMPLIANCE MONITORING –
MEADOWVIEW LANDFILL**

2016 Monitoring Program



Prepared for:
Municipality of the County of
Kings

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1.0 INTRODUCTION

1.1 GENERAL

Stantec Consulting Ltd. (Stantec) was retained by the Municipality of the County of Kings (the Municipality) to perform environmental compliance monitoring at the Meadowview Landfill (the Site). The 2016 program included groundwater, surface water, and fisheries habitat monitoring, completed in accordance with Stantec's proposal dated March 28, 2016. The 2016 environmental compliance monitoring program is comprised of field data collection, analysis, and reporting.

1.2 BACKGROUND

The Town of Kentville established a landfill at the Site in the late 1960s. The Municipality took over operations and continued to operate the landfill until it closed on June 30, 1999. Upon closure, the Municipality implemented a Closure Plan, which drew on specifications outlined in the Site Closure Report (Porter Dillon, 1995). The Closure Plan set out the requirements for an environmental monitoring program, which this report serves to satisfy.

1.3 SITE DESCRIPTION

The Site is located on Brook Street near the Town of Kentville, NS (Figure A-1, Appendix A). The Site is located at Lanzy Road and Brooklyn Street, south of Camp Aldershot in Kentville, and is described by Service Nova Scotia and Municipal Relations' Property Online as PIDs No. 55047310, 55058325, 55047328, 55047369, 55047351, 55049035, 55047336, and 55047476. The monitoring locations used for the environmental monitoring program are situated on land owned by the Municipality and the Department of National Defence (DND).

The topography of the Site and surrounding areas slopes south towards the Cornwallis River. Background, or up-gradient monitoring sites are located north of the former landfill while down-gradient monitoring sites are located to the south between the former landfill and the river. The landscape surrounding the Site is comprised of forested areas intersected by several roads with marsh and river habitat to the south.

1.4 REGULATORY FRAMEWORK

1.4.1 Guidelines for Canadian Drinking Water Quality

Groundwater chemistry results are compared to the Guidelines for Canadian Drinking Water Quality (GCDWQ) (Health Canada, 2014). These guidelines contain several concentration levels that results can be compared to: the Maximum Acceptable Concentration (MAC), the Interim Maximum Acceptable Concentration (IMAC), and the Aesthetic Objective (AO).



1.4.2 CCME Freshwater Aquatic Life Guidelines

Surface water chemistry results are compared to the Canadian Council of Ministers of the Environment (CCME) Fresh Water Aquatic Life Guidelines (CCME, 1999).

1.5 OBJECTIVES AND SCOPE

The scope of the 2016 monitoring program generally consisted of the following;

- groundwater sampling at 21 monitoring wells (MW),
- surface water sampling at one location, and
- fisheries habitat monitoring at three locations.

The locations of these sampling points are shown on Figure A-1 (Appendix A). The overall objectives of the monitoring program are to comply with the requirements put forth in the Closure Plan. By monitoring the groundwater, surface water and fisheries habitat over time, trends or changes can be identified and where necessary alterations to the monitoring program can be implemented.

2.0 FIELD INVESTIGATION

2.1 HEALTH AND SAFETY

Stantec prepared and reviewed a project specific risk management strategy prior to the commencement of field work. Relevant safe work practices were reviewed by all Stantec staff that completed field work on this project. During field work, a site safety meeting was conducted by Stantec staff each morning at which a last minute risk assessment (LMRA) was completed and site conditions assessed. This LMRA form identified potential health and safety risks at the Site that might not have been previously identified during project planning. Copies of all signed health and safety documentation are retained by Stantec in the project file. No health and safety incidents occurred while Stantec was on Site conducting field work.

2.2 METHODOLOGY

Figure A-1 (Appendix A) provides the location of all sampling points used in 2016. Sampling was conducted between July 13 and 15, 2016. Groundwater was sampled on July 13 and 14. Surface water was sampled on July 14. Fish habitat work was conducted on July 14 and 15.

2.2.1 Groundwater

Field staff conducted all groundwater sampling in accordance with Stantec's Standard Operating Procedures (SOPs). Static water levels were measured in each monitoring well from the top of the PVC well casing using a Solinst probe. Monitoring well conditions were noted and

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the stickup height was measured from the top of the PVC well casing to ground. Water levels were measured prior to any purging or sampling.

Each monitoring well was purged using the existing dedicated Waterra tubing and foot valve until dry or three well volumes were removed. Several monitoring wells required a new set of tubing and foot valve which were installed.

In-situ physical water quality parameters of temperature, pH, dissolved oxygen, total dissolved solids (TDS), oxygen-reduction potential (ORP), and conductivity were measured using a YSI 556 multi meter. Qualitative groundwater descriptions of colour, turbidity, and sheen were also recorded by field staff. Samples were collected following Stantec SOPs and used the dedicated Waterra tubing and foot valves. Metals samples were field filtered using single use 0.45 µm inline disposable filters.

Samples were collected in laboratory supplied containers and preserved in insulated coolers provided by Maxxam Analytics, of Bedford, NS (Maxxam). Table 1 provides a summary of laboratory analyses conducted on all samples.

Table 1 Meadowview Landfill Monitoring Requirements

Location	Easting (m)	Northing (m)	General Chemistry and Metals	VOC (EPA-624)	TPH	SVOC (EPA-625)	Benthic Invertebrates
Groundwater							
MW-4A	380795	4993550	X	X	X	X	
MW-12B	379991	4993816	X	X	X		
MW-19B	380892	4993807	X				
MW-20A	380962	4993769	X				
MW-21C	380860	4993440	X				
MW-22A	380036	4993547	X	X	X		
MW-22B	380036	4993546	X	X	X	X	
MW-22C	380034	4993546	X				
MW-23A	379827	4993726	X				
MW-23B	379828	4993729	X				
MW-23C	379824	4993728	X				
MW-24A	380106	4993646	X	X	X		
MW-24B	380107	4993644	X	X	X	X	
MW-25B	380242	4993537	X	X	X		
MW-27B	380819	4994151	X*				
MW-27C	380821	4994151	X*				
MW-29B	380288	4994102	X				

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Location	Easting (m)	Northing (m)	General Chemistry and Metals	VOC (EPA-624)	TPH	SVOC (EPA-625)	Benthic Invertebrates
MW-29C	380291	4994103	X				
MW-31A	380079	4994174	X				
TH-1	380612	4993546	X	X	X	X	
TH-2	380580	4993536	X				
MW-40D (dup)			X	X	X		
Trip Blank				X			
Surface Water							
SW7	380015	4993519	X [†]				X
SW7A	380033	4993444					X
REF	377276	4994100					X

Notes:

- 1) "X" indicates that the analysis is required each year (2016-2019)
- 2) Surface water samples to be collected during low flow conditions
- 3) "*" denotes general chemistry analysis only
- 4) "+" denotes that the metals sample is unfiltered

2.2.2 Surface Water

Field staff conducted all surface water sampling in accordance with Stantec's SOPs. Special care was taken at the sampling locations to not disturb sediment to minimize the amount that entered sample containers. In-situ physical water quality parameters of temperature, pH, dissolved oxygen, TDS, ORP, and conductivity were measured using a YSI 556 multi meter.

Grab samples were collected in laboratory supplied containers and preserved in insulated coolers provided by Maxxam. Samples were uniquely labeled and control was maintained using chain of custody forms.

2.2.3 Fish Habitat

Benthic sampling, water quality measurements, fish sampling and habitat characterizations/confirmations were carried out on July 14 and 15, 2016. In-situ physical water quality parameters at each site were measured during the surface water sampling event.

2.2.3.1 Fish Sampling

At each of the sites, two conical, wire minnow traps (41 cm x 22 cm; of 1 cm x 1 cm mesh; 2.5 cm diameter opening) were baited with cat food and set for approximately 24 hours. During deployment of the minnow traps, considerations of flow levels were taken and placement of exact in-stream positioning varied while assuring submergence of the trap opening. The trap placed at SW7 was placed 20 m upstream from previous assessments to accommodate



submergence of the trap opening (with no immediate differences in habitat being observed between the historic site and the one chosen in this survey). Traps were securely affixed to the streamside to prevent movement and/or removal of traps from water flow as well as potential scavenging by predators.

2.2.3.2 Benthic Macroinvertebrates Sampling

Methods for benthic macroinvertebrate (BMI) sampling were consistent with those conducted in 2003-2014, as described in the Canadian Aquatic Biomonitoring Network (CABIN) protocol (Reynoldson et al 2003). Prior to 2003, various methods were utilized including; a surber sampler (1 square foot) in 1998-1999, and a 15 x 15 cm square quadrat in 2000-2002. As per CABIN protocol, BMI samples were fixed with 10% buffered formalin in sterile glass jars in the field, thus ceasing organic activity. The following day, BMI samples were transferred to 70% isopropyl alcohol for preservation. All benthic macroinvertebrate samples were submitted to Envirosphere Consultants Ltd., which follows sample processing and taxonomy, including QA/QC procedures as laid out within the CABIN Laboratory Methods manual (refer to Appendix H).

Variations in distribution and abundance of BMIs may indicate the perturbation in question, but these may also be a result of naturally occurring seasonal variations. Systematic collection and sampling techniques can be used to overcome these disadvantages. Additionally, based on CABIN protocols, a comparison of affected habitats to a “reference condition” habitat should be utilized to identify changes in overall abundance and/or diversity of BMIs. Black Brook has been selected as the Reference Site, but understanding how close it remains to “reference condition” is unclear.

BMs of many species and groups of species are diagnostic of types of aquatic habitats and their associated water qualities. Known as “indicator species”, they become numerically dominant under specific environmental conditions. Those organisms which exhibit adaptations to life in lotic (flowing water) waterbodies are indicators of a healthy stream environment. Contradictorily, those organisms living in depositional substrates exhibit features of lentic environments (i.e. poor stream conditions). A number of indices and ratios can be used to further analyze results and illustrate trends.

2.2.4 Quality Assurance and Quality Control

Quality assurance and quality control (QA/QC) procedures included following appropriate field methodologies and SOPs. One blind field duplicate sample was submitted as part of the groundwater monitoring program. All samples were uniquely labelled and control was maintained using chain of custody forms. The laboratories report the results from their own internal QA/QC process, which are included in Appendices F and H.

3.0 RESULTS

The following provides the results of the 2016 field program.

3.1 GROUNDWATER

3.1.1 Field Results

Table B-1 (Appendix B) provides the in-situ physical parameters and observations collected during well purging. These can be summarized as follows:

- Groundwater elevations ranged from 6.91 to 21.40 meters above sea level (mASL),
- pH ranged from 5.36 to 8.28,
- Water temperature ranged from 7.91 to 12.24 °C,
- Conductivity ranged from 0.028 to 1.535 mS/cm, and
- Monitoring well conditions were generally noted as good except for MW-19B which contained an obstruction at a depth of 6 m.

3.1.2 Analytical Results

Analytical results for the 2016 monitoring program are provided in Tables B-2 to B-6 (Appendix B) and are discussed below. Additionally, results from historical monitoring events are provided in Appendix C. Historical analytical chemistry results were provided to Stantec by the consultant responsible for the 2012–2015 monitoring events, WSP Canada Inc. and have not been verified by Stantec.

3.1.2.1 General Chemistry and Metals

Laboratory results for general chemistry are listed in Table B-2 and results for metals are listed in Table B-3, both in Appendix B.

Concentrations for general chemistry and metals analysis were found to be below the applicable GCDWQ, with the following exceptions:

- Turbidity exceeded MAC and AO levels in all MW's except for MW-22A (however, this turbidity objective is for water treatment and delivery systems, not specifically for groundwater),
- Total dissolved solids exceeded AO levels in MW-4A, MW-22B, MW-24B, MW-25B, and TH-1,
- Colour exceeded AO levels in MW-12B, MW-22C, and MW-24B,
- Arsenic exceeded MAC levels in MW-4A, MW-22C, MW-24B, and TH-1,
- Barium exceeded MAC levels in MW-4A, MW-24B, and TH-1,
- Iron exceeded AO levels in MW-4A, MW-12B, MW-20A, MW-22A, MW-22B, MW-22C, MW-23B, MW-24B, TH-1, and TH-2,

- Manganese exceeded AO levels in MW-4A, MW-12B, MW-20A, MW-22A, MW-22B, MW-22C, MW-23A, MW-23B, MW-24A, MW-24B, MW-25B, TH-1, and TH-2, and
- Uranium exceeded MAC levels in MW-22A.

3.1.2.2 Volatile Organic Compounds

Laboratory results for VOCs are listed in Table B-4 (Appendix B). Samples submitted for VOC analysis were found to be below the applicable GCDWQ, with the following exception:

- 1,4-Dichlorobenzene exceeded AO levels in MW-4A, MW-24B, and TH-1, but none exceeded MAC values.

3.1.2.3 Semi-Volatile Organic Compounds

Laboratory results for SVOCs are listed in Table B-5 (Appendix B). Samples submitted for SVOC analysis were found to be below the applicable GCDWQ, with the following exception:

- 1,4-Dichlorobenzene exceeded AO levels in MW-4A, MW-24B, and TH-1.

3.1.2.4 Petroleum Hydrocarbons

Laboratory results for PHCs are listed in Table B-6 (Appendix B). All samples submitted for PHC analysis were found to be below the applicable GCDWQ.

3.1.3 Trend Analysis

Trends in parameters associated with landfill leachate were analyzed in monitoring wells up-gradient and down-gradient of the Site. Up-gradient wells include: MW-27B, MW-027C, MW-29B, MW-29C, and MW-31A. Down-gradient wells include: MW-4A, MW-12B, MW-19B, MW-20A, MW-21C, MW-22A, MW-22B, MW-22C, MW-23A, MW-23B, MW-23C, MW-24A, MW-24B, MW-25B, TH-1, and TH-2.

The leachate indicator parameters used included manganese, conductance, ammonia, sodium, chloride, iron, and total VOCs. Historical analytical results for these seven parameters have been plotted from 1996 to 2016 and can be seen in leachate indicator Figures D-1 to D-13 (Appendix D).

Trends noted through a visual assessment of the leachate indicator figures are summarized below:

- Manganese
 - Up-gradient wells show no discernable trends and consistently lower concentrations relative to down-gradient wells with several small spikes in MW-29B and MW-31A reported prior to 2010.
 - Concentrations in down-gradient wells are consistent with up-gradient wells in MW-19B, MW-20A, MW-21C, MW-22C, MW-23C, MW-25B, and TH-2.

- Concentrations in all other down-gradient wells are generally more elevated, show a much larger range and a higher variability between sampling events.
 - Concentrations in down-gradient well MW-24A show a minor downward trend.
- Conductance
 - Up-gradient wells show no discernable trends and consistently low concentrations relative to down-gradient wells.
 - Concentrations in down-gradient wells are generally more elevated and show a downward trend over time, most notably in MW-22A, MW-24B, and TH-1.
 - Concentrations in down-gradient well MW-25B show an upward trend.
- Ammonia
 - Up-gradient wells show no discernable trends and consistently low concentrations relative to down-gradient wells.
 - Concentrations in down-gradient wells are consistent with up-gradient wells except for elevated levels in MW-4A, MW-22A, MW-24B, and TH-1.
 - Concentrations in down-gradient well MW-4A show an upward trend.
- Sodium
 - Up-gradient wells show no discernable trends and consistently low concentrations relative to down-gradient wells.
 - Concentrations in down-gradient wells are consistent with up-gradient wells except for elevated levels in MW-4A, MW-22A, MW-22B, MW-24A, MW-24B, and TH-1.
 - Concentrations in MW-22A, MW-24B, and TH-1 show a downward trend.
- Chloride
 - Up-gradient wells show no discernable trends and consistently low concentrations relative to down-gradient wells.
 - Concentrations in down-gradient wells, including MW-12B, MW-19B, MW-21C, MW-22C, MW-23C, and TH-2 are consistent with concentrations in up-gradient wells and show no discernable trends.
 - Concentrations in down-gradient wells MW-23B and MW-25B show an upward trend.
 - Concentrations in down-gradient wells MW-22A, MW-22B, MW-24B, and TH-1 show a downward trend.
 - Concentration in down-gradient well MW-23A shows an increase up until 2012, with a drop in values back to pre-2008 after 2012.
- Iron
 - Up-gradient wells show no discernable trends and consistently low concentrations relative to down-gradient wells.
 - Concentrations in down-gradient wells, including MW-19B, MW-21C, MW-22C, MW-23A, MW-23C, and MW-24A are generally consistent with concentrations in up-gradient wells and show no discernable trends.
 - Concentrations in the remaining down-gradient wells are generally elevated and show no discernable trend.
- Total VOC
 - Calculated concentrations in these down-gradient wells are low and show a downward trend or no trend (MW-4A, MW-24A, MW-25B).

Monitoring well nests are comprised of multiple wells drilled to different depths and placed near each other. Nested wells include MW-22(A,B,C), MW-23(A,B,C), and MW-24(A,B). Shallow 'A' wells were drilled to a depth of 5-8 meters below grade (mbg) while moderate 'B' wells were drilled to a depth of 11-13 mbg, and deep 'C' wells were drilled to 23-25 mbg. The MW-22 set of nested wells showed that the 'B' and 'C' wells generally had the highest concentrations for leachate parameters ('B' more than 'C'). The MW-23 set of nested wells showed that the 'A' and 'B' wells shared the highest concentrations for leachate parameters ('B' more than 'A'). The MW-24 pair of nested wells showed that the 'B' well had the highest concentrations for all leachate parameters.

Groundwater elevations over the history of the monitoring program were also evaluated for trends and are shown in Figures D-14 and D-15 (Appendix D). Results from the 2016 monitoring event were consistent with historical ranges and showed no discernable trends, which is expected.

3.1.4 QA/QC

QA/QC measures included following appropriate field methodologies and SOPs, and collection of a field duplicate sample from MW-12B. Analysis of the field duplicate was completed for general chemistry, metals, VOCs, and petroleum hydrocarbons. Results for the field duplicate of MW-12B (MW-40D) can be seen in Tables B-2 to B-6 (Appendix B). Relative percent differences (RPD) between MW-12B and MW-40D were calculated and are shown in Tables B-7 to B-9 (Appendix B). All RPD values calculated were generally within acceptable ranges. Maxxam also follows laboratory QA/QC procedures which are identified in the laboratory Certificates of Analysis (COA) found in Appendix F.

3.2 SURFACE WATER MONITORING

3.2.1 Field Results

In-situ physical parameters were measured at SW7 using a YSI 556 multi meter, rented from Pine Environmental of Halifax and are summarized below.

- pH was 7.09,
- Water temperature was 13.44 °C,
- Conductivity was 0.541 mS/cm, and
- The water was noted to be flowing and clear.

3.2.2 Analytical Results

Analytical results for the 2016 monitoring program are provided in Table B-10 (Appendix B) and are discussed below. Additionally, results from historical monitoring events are provided in Appendix C. Historical analytical chemistry results were provided to Stantec by the consultant responsible for the 2012–2015 monitoring events, WSP Canada Inc. and have not been verified by Stantec.

Analytical results from SW7 showed a single exceedance of the CCME FWAL maximum allowable concentration for total iron.

3.2.3 Trend Analysis

Surface water data was analyzed for trends in total iron, total aluminum, chloride, and total cadmium. Historical analytical results for these four parameters have been plotted from 1996 to 2016 and can be seen in Figures D-16 to D-19 (Appendix D).

Trends noted through a visual assessment of these figures are summarized below:

- Total iron concentrations show no discernable trend and remain well above the CCME FWAL guideline of 300 mg/L, but within historical ranges,
- Aluminum and chloride concentrations show no discernable trends and remain below CCME FWAL guidelines and within historical ranges, and
- Total cadmium concentrations show no discernable trends, often reported as a non-detect.

3.3 FISH HABITAT MONITORING

3.3.1 Field Results

Water quality measurements and minnow trap deployment were conducted on July 15, 2016, with both BMI sampling, and fish and fish habitat sampling/observations occurring on July 16, 2016. Weather on both days was hot (25-30°C) and sunny with little wind. In the two months leading up to July 2016 sampling events, precipitation totals (recorded at Kentville Environment Canada Station) (Environment Canada, 2016) were 85.1 mm (May 2016) and 15.2 mm (June 2016). The dry weather prior to sampling appeared inconsequential in its effects on flows within the West Tributary (SW-7 & SW-7A) and Black Brook (Reference) as these were comparable to previous sampling conducted in 2013, 2014, and 2015.

3.3.2 Water Quality and Site Habitat Descriptions

Similarities in water quality conditions to those reported from 2007-2015 (WSP, 2015) were observed in both West Tributary and Black Brook. A summary of water quality parameters recorded during 2016 field work is shown in Table E-1 (Appendix E). Observations of physical conditions at each sampling site remain largely unchanged from those presented in previous reports (WSP 2014, 2015). Photographs of the watercourse (views upstream, downstream, and of the left and right riparian zones), and the substrate within it were taken at each site (Appendix G). Influencing diversity of aquatic vegetation and biota, the abundance of fine sediments observed at sites SW7 and SW7A have an inherent low porosity and therefore low levels of sedimentary oxygen associated with it, and presumably cause lowered dissolved oxygen levels within the water during times of low flow (ABL Report 2012). Infilling with fine sediment and detritus has rendered the main channel at SW7 nearly inaccessible from either side. Evidence of illegal dumping (e.g., broken toilet, Photo G-12 in Appendix G) was observed where watercourse at SW7 runs via culvert, under an ATV trail.

Observations of an orange ferromanganese flocculent material previously reported in the West Tributary, especially at SW7A, and identified as being derived from elevated iron and manganese content in groundwater, was once again present in 2016 surveys. Observations of floc within Black Brook were only recorded once in 2010, and is presumed to be from a natural source due to the distance from the landfill and its location within the watershed (WSP, 2015). Observations in 2016 did not indicate any discernible differences to water quality and habitat from previous surveys, and dissolved oxygen levels at sites SW7 and SW7A were once again recorded as being below that required for all stages of life for cold-water biota (i.e. brook trout).

3.3.2.1 Site SW7 (West Tributary)

Site SW7 within the West Tributary was dominated by a riparian wetland with an overstory composed predominantly of alders (*Alnus sp.*), and willow (*Salix spp.*) with patches of serviceberry (*Amelanchier spp.*), alternate-leaved dogwood (*Cornus alternifolia*), red maple (*Acer rubrum*), and the occasional tamarack (*Larix laricina*) interspersed throughout. As the bank transitioned to upland, wild rose (*Rosa rugosa*) and raspberry (*Rubus sp.*) were found. Upland vegetation in a mostly mature, mixed wood forest consisted of canopy of white pine (*Pinus strobus*), eastern hemlock (*Tsuga Canadensis*), white spruce (*Picea glauca*), red maple, poplars (*Populus spp.*) and red oak (*Quercus rubra*). The upland understory included many ferns such as wood fern (*Dryopteris carthusiana*), intermediate fern (*D. intermedia*) and bracken fern (*Pteridium aquilinum*), along with various grasses.

Substrate composition within the wetted width of the stream at SW7 consisted of soft, brown, organic, and silty mud with an obvious and significant deposition of ferromagnese floc. Occasional gas releases were observed from substrate. With a mean depth of 0.1 m and wetted width ranging from 2 m – 5 m, instream vegetation capitalized on available habitat within slow flows over shallow organic substrates. Calla lily (*Calla palustris*), various sedges (*Carex spp.*), bur-reeds (*Sparganium spp.*), cat-tails (*Typha sp.*), duckweed (*Lemna sp.*), and grasses were found within the watercourse. The wet areas adjacent to it consisted of jewelweed (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), cinnamon fern (*Osmunda cinnamomeum*), vetch (*Vicia sp.*), bindweed (*Convolvulaceae*), horsetails (*Equisetum spp.*), goldenrods (*Solidago spp.*), St. John's Wort (*Hypericum perforatum*), and blue-flag (*Iris versicolor*).

3.3.2.2 Site SW7A (West Tributary)

Serviceberry, dogwood and a high percentage (<40% by count) of alder made-up riparian overstory, which at its upland edge, has an understory of royal fern (*O. regalis*), cinnamon fern, sensitive fern and St. John's Wort. Upland vegetation was comparable to that of SW7.

Multiple channels, with a mean wetted width of approximately 7 m and mean depth of approximately 0.1 m, braided through a soft, organic silty substrate very similar to SW7 with an increase of gaseous releases.

3.3.2.3 Reference Site (Black Brook)

Vegetation alongside Black Brook was heavily modified along its east bank, due to a lawn of the adjacent property. Trees were non-existent in the riparian zone, and grasses and sedges dominated. On the west bank, a thicket of immature maples, alders, wild rose, and raspberry overshadowing the lesser grasses and sedges was noted. Vegetation of stream edges along both sides included sensitive fern and turtlehead (*Chelone glabra*). Instream vegetation included various grasses, blue-flag, watercress (*Nasturtium officinale*) and wild-celery (*Vallisneria americana*).

Black Brook is a small, sinuous stream composed entirely of riffles and runs throughout the observed stretch. Having a mean wetted width of approximately 2 m and a mean depth of 0.2 m, this entrenched stretch flows via culvert under Brooklyn Street over a substrate composed of sand/gravel riffles, with deposits of organics in the bends of shallow runs.

3.3.3 Fish Sampling

Details of sites sampled, number of minnow traps set, trap hours and catch per unit effort are presented in Table E-2 (Appendix E).

Historically, fish have been captured in minnow traps at sites SW7, SW7A, and Reference. In 2016, fish were present in each of the three locations (Table E-3, Appendix E). A single *Gasterosteus* sp. (stickleback) fish was captured at site SW7. At site SW7A, multiple specimens (likely of the same species, although not confirmed) of the genus *Gasterosteus* were caught. At the REF site, a single *Gasterosteus* sp. specimen was contained within the trap. A reduction in overall fish abundance was observed in 2016 from previous years (2007 – 2013 and 2015, ranged from 20-75 specimens) and is comparable to those observed in 2006 (six specimens) and 2014 (eight specimens). Following two years (2014 & 2015) of no fish caught at site SW7, a single *Gasterosteus* sp. was captured (Figure E-1, Appendix E).

Within watercourses at sites SW7, SW7A and the Reference site, sampling of both fish and benthic invertebrates has indicated that large and/or diverse fish populations are not likely present. Historically only six species of fish have been identified, and in 2016 only one genus (consisting of two potential species able of inhabiting these locations) was sampled (with an additional, second species, a brook trout (*Salvelinus fontinalis*) caught in kick-nets during benthic sampling).

3.3.4 Benthic Macro Invertebrates

Benthic macro-invertebrates (BMI) are a semi-quantitative (due to sub-sampling during laboratory analysis) means of measuring environmental impacts within a watercourse and are used as an important indicator of overall ecological health of aquatic environments. BMI monitoring is utilized for the following reasons:

- They are ubiquitous, and as such, are affected by environmental deviations in a large variety of habitats;
- They are rich in species diversity; thus the large number of species produce a range of responses;
- They are sedentary, allowing for determination of spatial extents of environmental impacts;
- They are long-lived, allowing chronologic changes in abundance and age structure to be followed; and
- They integrate conditions temporally, thus providing evidence of trends over long periods of time (Mackie, 2004)

Often preferring slow moving, warm water conditions, the diverse order of Dipterans (collectively known as true flies), along with many other aquatic invertebrates, has one or more juvenile growth stage within the aquatic environment. Some of the more prevalent Families of Dipterans occurring (in one or more stages of development) within any of the three sites combined include; phantom crane flies (Ptychopteridae) and non-biting midges (Chironomidae), with minimal (<3% by count) occurrences of biting midges (Ceratopogonidae), black flies (Simuliidae), crane flies (Tipulidae), dagger/balloon flies (Empididae), and horse/deer flies (Tabanidae). Watercourses which exhibit dominance by Dipterans are generally indicative of poor fish habitat, often inhabiting those with elevated silt sedimentation and deposition of detritus (decaying organic matter), reducing oxygen levels necessary for fish survival (Mackie 2004). At sites SW7 & SW7A, approximately 50% of the total invert count (2088 of 4096 individuals) was composed of Dipterans, of which over 80% (1734 of 2088) was sampled from sites SW7 and SW7A.

Highly adapted to, and having a preference for inhabiting fast-moving, cool temperature aquatic habitats, the Orders of Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies) are collectively referred to as EPT taxa. Being mostly intolerant of contamination and poor water quality conditions, a dominance of EPTs within a given watercourse is generally indicative of good fish habitat consisting of low turbidity, cobble/gravel substrates, and elevated oxygen levels with minimal anthropogenic disturbances (Mackie 2004). The combined count from all three sites of EPTs was less than 3.5% of total invertebrates sampled, of which, almost 85% (118 of 140) were collected from the Reference site. No EPTs were collected and sampled from SW7A. Results of BMI sampling are summarized in Table E-4 and Figures E-2 and E-3 (Appendix E), with laboratory analysis results found in Appendix H. Historical analytical BMI sampling results were provided to Stantec by the consultant responsible for the 2012 – 2015 monitoring events, WSP Canada Inc. and have not been verified by Stantec. Ratios of Dipterans to EPTs is presented in Figure E-2 (Appendix E).

Comparisons of BMI data collected in 2016 to previous years, indicate that much is the status quo for all three sites. Results of sites SW7 and SW7A still illustrate environmental impacts, putting it into a condition of degradation, beyond that of reference condition. Historical watercourse quality of the West Tributary (sites SW7 and SW7A) is not known preceding initiation of monitoring in 1998. Black Brook was added as a reference along with an additional point (SW7A) on the West Tributary in 2004, and review of abundance and diversity of EPTs present there since, suggests that the Reference site within Black Brook is below reference condition itself and should

only be considered a rough basis for contrast, unlikely being representative of pre-landfill conditions of the West Tributary. Comparisons solely of Dipteran to EPT ratios (almost 80:1) between sites SW7 and SW7A to that in the Reference site, suggest that the West Tributary (containing sites SW7 and SW7A) was heavily impacted and lacked suitable conditions for fish and fish habitat.

4.0 CONCLUSIONS

The following conclusions were developed based on the results of the 2016 sampling program and historical data.

4.1 GROUNDWATER MONITORING

Based on the results of the 2016 groundwater monitoring program, the following conclusions can be made;

- Water level elevations ranged from 6.91 and 21.40 mASL during the July 2016 monitoring event. These elevations are consistent with the range of historical water level elevations.
- Groundwater quality at site was generally consistent with historical monitoring events and results generally fall below GCDWQ.

4.2 SURFACE WATER MONITORING

Based on the results of the 2016 surface water monitoring program, the following conclusions can be made;

- Surface water quality in SW7 remained consistent with historical monitoring events.

4.3 FISH HABITAT MONITORING

Ongoing since 1998 at SW7 and 2004 at SW7A and Reference sites, monitoring of the Meadowview Landfill at these sites along the West Tributary (SW7 and SW7A) and Black Brook (Reference Site) has occurred with the purpose of monitoring impacts to the aquatic environment by the now closed landfill site. Water quality conditions have generally been acceptable for aquatic life, with small variations of parameters over time.

Abundance and species richness within both fish and benthic macroinvertebrate communities have remained consistently low, and mostly stable, with intermittent and temporary variations. In 2016, dipteran population percentages have returned from a 2015 near-low level, to within their normal range at site SW7A.

Invertebrate communities within the West Tributary in 2016 exhibited an increase (approximately 3-5x) over 2015 in abundance of individual organisms and an increase (approximately 1.5-2x) in the number of taxa observed. The Reference Site exhibited an increase (approximately 2.5x)

over 2015 in abundance of individual organisms, while taxon richness remained within expected annual variations. Composition of benthic macroinvertebrate communities at both sites SW7 and SW7A indicate they are in a state of degradation, below that of a natural state. The high abundance of dipterans sampled is indicative of poor water quality as this taxa prefers conditions of poor fish habitat. Percentages of EPTs sampled from sites SW7 and SW7A (0-2%) was lower compared to those from the Reference Site (14%).

In terms of fish abundance, communities in 2016 differed from those reported from previous years, as in 2016 they were composed of just one genus (*Gasterosteus* sp.), while previous years had two or more species present. A second species (*S. fontinalis*) was captured during benthic sampling at the Reference Site. As previously reported (WSP, 2015), both sites SW7 and SW7A are historically connected to the Cornwallis River, but confirmation of continuity and connectivity between these watercourses has not been established, and as such, could contribute to a decrease in fish species diversity.

Reasonable stability in physical conditions over time has been observed at all three sites. With temporary fluctuations expectedly occurring, it appears as though no sign of further improvement or degradation of aquatic environmental conditions has occurred. Water quality is not the only limiting factor in aquatic productivity, but it should be noted that improvements to water quality alone would likely lead to an increase to results of benthic macroinvertebrates and fish community abundance, diversity, and health.

5.0 RECOMMENDATIONS

The following recommendations were developed based on our observations in the field and conclusions presented in this report.

1. The nature of the blockage at 6 m depth in MW-19B is unknown. It could be something simple like a section of tubing that was dropped down the well during a previous sampling event. It is possible to try and remove such a blockage using a hook or by knocking it away using a weighted rod or pipe. It may not be possible to recover the object that is causing the blockage (it may fall to the bottom of the well), but the well could be used for sampling again if the blockage can be moved to below the water level. A Stantec technician can go to the site in advance of the sampling program to conduct this work. If the blockage can not be removed and a more significant effort is needed to repair the well, the Municipality will be advised and an approach to the repair agreed upon. The worst case scenario is that MW-19B will need to be replaced with a new drilled monitoring well of the same construction. Stantec recommends evaluating the need for this well as part of the future monitoring program before drilling (see below).

2. It was unclear from the field visit and historical dataset if the Reference Site in Black Brook is representative of a true “reference condition.” A reference condition is one that has the same characteristics as the surface water sites of interest and is not impacted by an anthropogenic condition or contamination (e.g., proximity to a road, influenced by a culvert). Field observations by WSP in 2010 noted the presence of orange ferromanganese flocculent (floc) material at the References Site which was interpreted as being from some other source because of its geographic location relative to the landfill. This same sort of floc has been noted consistently at the other surface water monitoring points downgradient of the landfill. Stantec recommends that further visual inspection of the Reference Site area be conducted to determine if it is fit for purpose and to identify suitable alternative locations if it is not. Our concern is that the road and culvert might have an influence on this location. Should the Municipality be interested, Stantec could complete this task prior to the planned 2017 sampling event.
3. The use of the calculated total VOC as a plume indicator parameter is a questionable method. It is preferable to use a parameter that is directly measured in the laboratory and the concentrations are such that allows a clear distinction between background and impacted conditions. The summation of detected VOC concentrations, at least in the way it is currently implemented, does not account for which parameters comprise the final number or changes in detection limits over time. The concentrations of VOCs (total and individual) are low, the majority of which have never been detected at the site. Prior to 1996 (not previously included as part of the trend analysis), higher concentrations of toluene resulted in the only calculated total VOC values close to or greater than 100 µg/L, but subsequently dropped to around the detection limit in future sampling events. The only VOC parameters that are routinely detected are 1,4-dichlorobenzene, benzene and chlorobenzene. All three have a maximum allowable concentration guideline value; only 1,4-dichlorobenzene and chlorobenzene have aesthetic objectives. None of these have had concentrations that exceed the maximum allowable concentration. Of these parameters, 1,4-dichlorobenzene is the only one that has had exceedances of the aesthetic objective. Based on this analysis, Stantec recommends that the use of total VOC as an indicator parameter be avoided. Our review of the historical dataset does not indicate that any of the individual VOC compounds could be used as a surrogate. In fact, pending the review of the monitoring program proposed below, VOCs may be recommended to be removed from the analyte list because the concentrations are continually low or not detectable.
4. Stantec recommends re-evaluating the groundwater and surface water monitoring network using the 2016 and historical data to identify if changes could be made to reduce the scope. It is our understanding that former local groundwater well users are now provided with municipal water, so the human health pathway has been removed. This means that the site can now be considered non-potable, and the potential concern is groundwater discharge to surface water and fish habitat. Consideration should be given to using the more appropriate Nova Scotia Environment (NSE) Contaminated Sites Environmental Quality Standards Tier 1 and/or Tier 2 for evaluating future annual monitoring data and in proposing changes to the monitoring scheme. Groundwater sampling would help to identify new “plugs” of contamination moving through the system in the future.

The surface water monitoring itself is the best way to evaluate the health of the receiving body, and to identify impacts that warrant action. An argument would have to be made to this effect and be backed using an interpretation of the monitoring data. Any proposed changes to the sampling scheme would need to be approved by NSE. Should the Municipality be interested, Stantec could complete this task and the associated filing with NSE with the goal of receiving approval prior to the planned 2017 sampling event.

5. In the absence of any approved changes to the sampling program, the 2017 monitoring event should proceed with the following planned activities:
 - a. Groundwater sampling at all monitoring wells for parameters consistent with the 2016 analysis,
 - b. Surface water sampling at all surface water sites, including, SW1, SW2, SW3, SW7, SW7A, and REF for general chemistry and metals, and
 - c. Benthic Invertebrates sampling at SW7, SW7A, and REF.

6.0 CLOSURE

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report, and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

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The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers and other surface or sub-surface utilities and structures are not guaranteed. Before starting work, the exact location of all such utilities and structures should be confirmed and Stantec assumes no liability for damage to them.

FINAL REPORT: ENVIRONMENTAL COMPLIANCE MONITORING – MEADOWVIEW LANDFILL

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Regards,

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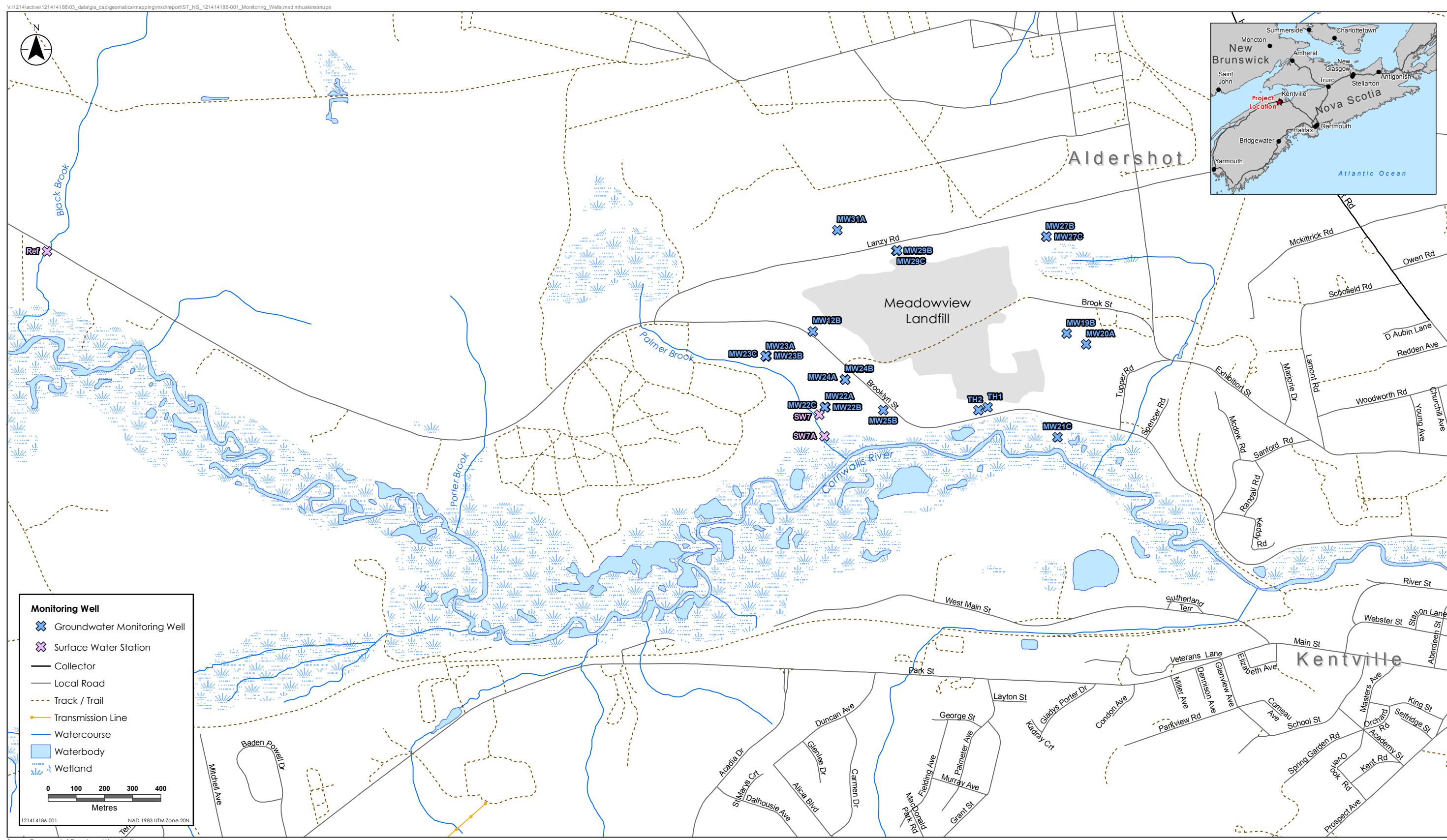
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Appendix A

Drawings and Figures



Appendix B

Chemistry Tables

Table B-1 Summary of Groundwater Field Measurements
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Well ID	Up-gradient or Down-gradient	Well Depth (m)	Top of Casing Elevation* (masl)	Date Sampled	Depth to Water in Well (m)	Water Elevation (masl)	Depth of Water in Well (m)	Volume Purged (L)	pH	Dissolved Oxygen (mg/L)	Temperature (°C)	Conductivity (mS/cm)	Observations
MW-31A	Up-gradient	9.13	25.64	13-Jul-16	6.26	19.38	2.87	na	5.77	3.42	7.91	0.028	Light brown, no smell, no sheen, little silt
MW-29B	Up-gradient	9.55	23.07	13-Jul-16	3.31	19.76	6.24	20	7.17	2.50	8.53	0.146	Light brown, no smell, no sheen, little silt
MW-29C	Up-gradient	22.19	23.20	13-Jul-16	3.49	19.71	18.70	60	7.66	1.97	8.66	0.102	Light brown, no smell, no sheen, little silt
MW-27B	Up-gradient	13.47	24.21	13-Jul-16	2.81	21.40	10.66	40	7.29	10.31	10.34	0.118	Light brown, no smell, no sheen, little silt
MW-27C	Up-gradient	23.27	24.06	13-Jul-16	2.90	21.16	20.37	60	7.41	11.50	8.88	0.149	clear, no smell, no sheen, very little silt
MW-19B	Down-gradient	40.80	30.71	13-Jul-16	18.13	12.58	22.67	60	8.18	9.87	11.64	0.139	New tubing, break in well at 6 m doesn't allow pump down. Light grey, no smell, no sheen, no silt.
MW-20A	Down-gradient	25.90	29.00	13-Jul-16	21.23	7.77	4.67	25	6.65	2.78	11.93	0.150	very light brown, no smell, no sheen, no silt
MW-23A	Down-gradient	4.80	12.90	13-Jul-16	2.58	10.32	2.22	15	6.09	3.33	9.06	0.232	brown, no smell, no sheen, little silt
MW-23B	Down-gradient	11.31	12.95	13-Jul-16	2.63	10.32	8.68	45	5.89	1.01	8.42	0.214	orange brown, no smell, no sheen, some silt
MW-23C	Down-gradient	22.75	12.62	13-Jul-16	2.38	10.24	20.37	120	8.28	10.31	8.39	0.088	Light brown, no smell, no sheen, little silt
MW-12B	Down-gradient	13.51	13.32	14-Jul-16	2.51	10.81	11.00	60	7.16	3.28	8.09	0.113	Light brown, no smell, no sheen, little silt
MW-22A	Down-gradient	8.58	11.02	14-Jul-16	2.15	8.87	6.43	40	6.85	2.98	8.70	0.597	very light brown, no smell, no sheen, no silt
MW-22B	Down-gradient	13.10	11.08	14-Jul-16	2.39	8.69	10.71	60	7.34	2.03	9.41	1.185	Light brown, no smell, no sheen, little silt
MW-22C	Down-gradient	24.98	11.05	14-Jul-16	3.58	7.47	21.40	120	8.10	1.21	8.99	0.314	clear, no smell, no sheen, no silt
MW-24A	Down-gradient	4.68	13.33	13-Jul-16	3.23	10.10	1.45	15	5.36	2.17	12.24	0.401	clear, no smell, no sheen, no silt
MW-24B	Down-gradient	11.82	13.17	13-Jul-16	3.10	10.07	8.72	60	6.17	1.05	10.95	1.535	very light brown, no smell, no sheen, very little silt
MW-25B	Down-gradient	13.52	11.46	14-Jul-16	4.21	7.25	9.31	60	7.33	3.82	9.48	0.438	brown, no smell, no sheen, little silt
TH-1	Down-gradient	9.18	13.25	14-Jul-16	5.30	7.95	3.88	30	7.21	1.13	9.29	0.777	Light brown, no smell, no sheen, some silt
TH-2	Down-gradient	16.63	11.90	14-Jul-16	4.47	7.43	12.16	80	7.31	7.43	10.22	0.092	Light brown, no smell, no sheen, little silt
MW-4A	Down-gradient	10.42	11.70	14-Jul-16	4.79	6.91	5.63	na	6.90	5.56	12.00	0.746	brown, no smell, no sheen, little silt
MW-21C	Down-gradient	23.04	9.38	14-Jul-16	1.90	7.48	21.14	120	7.28	14.72	9.15	0.049	Light brown, no smell, no sheen, some silt

Notes:

*Top of casing elevations taken from Terms of Reference

Table B-2

2016 General Chemistry analytical results for the groundwater monitoring program
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Parameter	Units	RDL	AO	MAC	MW-4A	MW-12B	MW-12B DUP MW40D	MW-19B	MW-20A	MW-21C	MW-22A	MW-22B	MW-22C	MW-23A	MW-23B	MW-23C	MW-24A	MW-24B	MW-25B	MW-27B	MW-27C	MW-29B	MW-29C	MW-31A	TH-1	TH-2	
Anion Sum	me/L	N/A	-	-	14.1	1.38	1.41	2	1.76	0.71	4.53	17.9	7.69	3.44	2.92	1.39	4.94	20.1	10.8	1.73	2.06	2.16	1.57	0.43	10.2	1.25	
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	1	-	-	650	35	37	40	24	27	170	690	350	81	69	61	95	840	380	75	94	91	47	12	470	56	
Calculated TDS	mg/L	1	500	-	780	93	94	120	110	48	240	930	450	190	170	81	290	1100	560	100	120	120	90	28	580	74	
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	1	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	1.9	1	<1.0	<1.0	
Cation Sum	me/L	N/A	-	-	15.6	1.35	1.32	1.8	1.75	0.66	4.46	17.6	8.89	3.15	2.67	1.26	4.46	22.5	10.2	1.52	2.09	2.12	1.38	0.37	11.6	1.15	
Hardness (CaCO ₃)	mg/L	1	-	-	350	39	37	61	49	23	190	690	190	93	78	32	87	380	440	15	12	86	23	13	280	31	
Ion Balance (% Difference)	%	N/A	-	-	5.360	1.1	3.300	5.26	0.28	3.65	0.78	0.76	7.24	4.4	4.47	4.91	5.11	5.52	2.72	6.46	0.72	0.93	6.44	7.5	6.1	4.17	
Langelier Index (@ 20C)	-	N/A	-	-	0.508	-1.35	-1.49	-0.666	-1.38	-2.05	0.554	0.965	-0.139	-0.824	-1.11	-0.36	-1.47	0.387	0.694	-0.541	-0.448	0.143	-0.582	-2.86	0.451	-0.948	
Langelier Index (@ 4C)	-	N/A	-	-	0.262	-1.61	-1.74	-0.917	-1.64	-2.3	0.304	0.719	-0.388	-1.07	-1.36	-0.611	-1.72	0.141	0.446	-0.792	-0.699	-0.108	-0.833	-3.11	0.203	-1.2	
Nitrate (N)	mg/L	0.05	-	10	<0.050	<0.050	<0.050	<0.050	2	0.32	0.34	<0.050	0.12	<0.050	<0.050	<0.050	0.22	3.6	<0.050	<0.050	N/A	N/A	0.066	0.3	<0.050	<0.050	
Saturation pH (@ 20C)	Units	N/A	-	-	6.70	8.66	8.66	8.44	8.74	9.06	7.39	6.34	7.13	7.99	8.13	8.51	8.05	6.63	6.73	8.79	8.77	7.93	8.78	9.63	6.86	8.59	
Saturation pH (@ 4C)	Units	N/A	-	-	6.95	8.91	8.91	8.69	8.99	9.31	7.64	6.58	7.38	8.24	8.38	8.76	8.3	6.88	6.98	9.04	9.02	8.19	9.03	9.88	7.11	8.85	
Total Alkalinity (Total as CaCO ₃)	mg/L	100	-	-	650	35	37	40	24	27	170	690	350	81	69	62	96	840	380	76	96	92	48	12	470	56	
Dissolved Chloride (Cl)	mg/L	1	250	-	38	20	20	33	41	4.3	40	150	25	56	45	3.3	95	120	110	4.8	4.5	8	17	4.3	27	4.2	
Colour	TCU	5	15	-	11	22	8.8	<5.0	<5.0	<5.0	<5.0	13	26	<5.0	<5.0	<5.0	45	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	7.6	<5.0	
Nitrate + Nitrite (N)	mg/L	0.05	-	-	<0.050	<0.050	<0.050	<0.050	2	0.32	0.34	<0.050	0.12	<0.050	<0.050	0.085	0.22	3.7	<0.050	<0.050	0.27	0.054	0.066	0.3	<0.050	<0.050	
Nitrite (N)	mg/L	0.01	-	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.048	<0.010	0.068	<0.010	<0.010	N/A	N/A	<0.010	<0.010	<0.010	<0.010	
Nitrogen (Ammonia Nitrogen)	mg/L	2.5	-	-	74	<0.050	<0.050	<0.050	0.15	<0.050	<0.050	1.2	14	<0.050	0.59	<0.050	5.9	95	<0.050	0.067	<0.050	<0.050	<0.050	0.1	40	<0.050	
Total Organic Carbon (C)	mg/L	0.5	-	-	19 (1)	0.67	0.8	<5.0 (1)	<0.50	<0.50	1.6	1.3	9.5 (2)	<25 (1)	2.5	<0.50	2.2	28 (2)	9.4 (2)	<5.0 (1)	<5.0 (1)	<25 (1)	<5.0 (1)	7.4 (1)	<0.50		
Orthophosphate (P)	mg/L	0.01	-	-	0.034	0.016	0.013	0.036	0.01	0.37	0.013	0.019	0.016	0.043	0.013	0.028	0.016	0.02	0.021	0.02	0.017	0.028	0.012	0.011	0.027	0.013	
pH	Units	N/A	6.5-8.5	-	7.21	7.31	7.17	7.78	7.36	7.01	7.94	7.3	7	7.16	7.02	8.15	6.58	7.02	7.43	8.25	8.33	8.08	8.2	6.77	7.31	7.65	
Reactive Silica (SiO ₂)	mg/L	2.5	-	-	35	13	13	10	5.7	12	10	19	15	11	12	9.7	16	17	15	11	6.1	9	6.9	6.3	31	11	
Dissolved Sulphate (SO ₄)	mg/L	2	500	-	<2.0	5.8	5.3	5.4	5	<2.0	<2.0	<2.0	<2.0	11	13	2.2	3.9	<2.0	<2.0	2.4	<2.0	4.1	5.1	3.5	<2.0	<2.0	
Turbidity	NTU	1	0.1-1	0.1-1	>1000	78	78	360	21	54	0.87	120	450	>1000	190	38	4.8	520	1.5	310	34	410	830	65	160	17	
Conductivity	uS/cm	1	-	-	1400	140	140	200	180	67	440	1600	730	340	290	130	520	1900	970	150	200	210	150	42	1000	110	
Dissolved Organic Carbon	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Dissolved Calcium	mg/L	0.1	-	-	100	14	13	20	17	6.6	61	230	60	31	25	11	24	100	150	4.8	4	29	7.7	3.9	88	9.7	
Dissolved Magnesium	mg/L	0.1	-	-	23	1	0.98	2.4	1.8	1.7	9.2	27	8.6	3.9	3.6	1.2	6.5	32	18	0.63	0.51	3.4	0.99	0.7	16	1.6	
Phosphorus	mg/L	0.1	-	-	0.12	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	0.28	<0.1	<0.1	<0.1	<0.1	<0.1	0.58	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	mg/L	0.1	-	-	50	0.89	0.94	2.9	1.4	1.3	6.3	8.1	16	1.4	2.5	2.7	15</										

Table B-3 2016 Metals analytical results for the groundwater monitoring program
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Parameter	Units	RDL	AO	MAC	MW-4A	MW-12B	MW-12B DUP MW40D	MW-19B	MW-20A	MW-21C	MW-22A	MW-22B	MW-22C	MW-23A	MW-23B	MW-23C	MW-24A	MW-24B	MW-25B	MW-27B	MW-27C	MW-29B	MW-29C	MW-31A	TH-1	TH-2
Aluminum	ug/L	5	100	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	6.2	<5.0	6.4	<5.0	N/A	N/A	<5.0	6.2	5.1	<5.0	<5.0			
Antimony	ug/L	1	-	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	N/A	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Arsenic	ug/L	1	-	10	64	7.2	7.7	1.2	<1.0	1.4	4.1	62	<1.0	5.9	6	<1.0	53	3.6	N/A	N/A	1.7	4.9	<1.0	26	<1.0	
Barium	ug/L	10	-	1000	3300	120	120	1.6	120	1.8	8.6	700	710	94	200	43	400	1700	27	N/A	N/A	12	2.9	5.5	1000	3.4
Beryllium	ug/L	1	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	N/A	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Bismuth	ug/L	2	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A	N/A	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Boron	ug/L	50	-	5000	390	<50	<50	<50	<50	<50	460	370	<50	<50	<50	140	970	160	N/A	N/A	<50	<50	220	<50		
Cadmium	ug/L	0.01	-	5	<0.010	<0.010	<0.010	0.011	0.039	<0.010	<0.010	0.052	<0.010	0.15	0.055	<0.010	0.22	<0.010	0.021	N/A	N/A	0.016	<0.010	0.011	<0.010	<0.010
Chromium	ug/L	1	-	50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.2	<1.0	<1.0	N/A	N/A	<1.0	<1.0	<1.0	<1.0	<1.0	
Cobalt	ug/L	0.4	-	-	12	2.3	2.3	<0.40	<0.40	<0.40	<0.40	9.5	15	<0.40	2.1	<0.40	<0.40	18	0.84	N/A	N/A	<0.40	<0.40	<0.40	6.3	<0.40
Copper	ug/L	2	1000	-	<2.0	<2.0	<2.0	<2.0	4.3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.5	<2.0	<2.0	<2.0	<2.0	<2.0	
Iron	ug/L	50	300	-	19000	5700	6100	<50	1800	<50	200	2700	41000	<50	3300	<50	65	40000	<50	<50	<50	<50	<50	12000	650	
Lead	ug/L	0.5	-	10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4	<0.50	<0.50	<0.50	<0.50	N/A	N/A	<0.50	<0.50	<0.50	<0.50	<0.50	
Manganese	ug/L	2	50	-	550	4200	4400	<2.0	150	4.2	57	3400	3300	820	2700	<2.0	410	3000	300	<2.0	<2.0	<2.0	<2.0	22	1100	59
Mercury	ug/L	0.026	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	N/A	N/A	-	-	-	-	-		
Molybdenum	ug/L	2	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A	N/A	<2.0	<2.0	<2.0	<2.0	<2.0		
Nickel	ug/L	2	-	-	18	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	25	12	<2.0	2.5	<2.0	2.5	18	11	N/A	N/A	<2.0	<2.0	<2.0	6.5	<2.0
Selenium	ug/L	1	-	50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	N/A	<1.0	<1.0	<1.0	<1.0	<1.0		
Silver	ug/L	0.1	-	-	<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	N/A	N/A	<0.10	<0.10	<0.10	<0.10	<0.10		
Strontium	ug/L	2	-	-	770	32	31	220	50	66	850	2000	280	39	50	93	150	780	1600	N/A	N/A	310	94	18	400	130
Thallium	ug/L	0.1	-	-	<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	N/A	N/A	<0.10	<0.10	<0.10	<0.10	<0.10		
Tin	ug/L	2	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A	N/A	<2.0	<2.0	<2.0	<2.0	<2.0		
Titanium	ug/L	2	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A	N/A	<2.0	<2.0	<2.0	<2.0	<2.0		
Uranium	ug/L	0.1	-	20	<0.10	<0.10	<0.10	<0.10	1.1	<0.10	<0.10	33	12	<0.10	0.22	<0.10	4	<0.10	<0.10	17	N/A	N/A	2	0.98	<0.10	<0.10
Vanadium	ug/L	2	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	N/A	N/A	<2.0	<2.0	<2.0	<2.0	<2.0		
Zinc	ug/L	5	5000	-	7.2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8	<5.0	7.5	<5.0	<5.0	6.1	<5.0	<5.0	-	-	<5.0	<5.0	<5.0		

Notes:

RDL - Reported Detection Limit (updated in 2016)

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

N/A - Not Applicable

MW-40D = Duplicate of MW-12B

Bold indicates exceedance in aesthetic objective.

Grey indicates exceedance in maximum allowable concentration.

Table B-4

2016 Volatile Organic Compound (VOC) analytical results for the groundwater monitoring program
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Parameter	Units	RDL	AO	MAC	MW-4A	MW-12B	MW-12B DUP MW40D	MW-22A	MW-22B	MW-24A	MW-24B	MW-25B	TH-1
1,1 - Dichloroethane	ug/L	2	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1 - Dichloroethylene	ug/L	0.5	-	14	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1 - Trichloroethane	ug/L	1	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2 - Trichloroethane	ug/L	1	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2 - Trichloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	ug/L	0.5	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	ug/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
1,2 - Dibromoethane	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
1,2 - Dichlorobenzene	ug/L	0.5	3	200	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2 - Dichloroethane	ug/L	1	-	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	ug/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
1,3 - Dichlorobenzene	ug/L	1	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4 - Dichlorobenzene	ug/L	1	1	5	2.6	<1.0	<1.0	<1.0	<1.0	<1.0	2.1	<1.0	1.9
1,4-Dichlorobutane	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
1-Chloro 2-Bromopropane	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
2,4 Chlorotoluene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyl ether	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	ug/L	1	-	5	1.6	<1.0	<1.0	<1.0	1.2	<1.0	2.7	<1.0	<1.0
Bromochloromethane	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	ug/L	1	-	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	ug/L	1	-	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	ug/L	0.89	-	-	<0.89	<0.50	<0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	ug/L	0.5	-	2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chlorobenzene	ug/L	1	30	80	4.8	<1.0	<1.0	<1.0	1.9	<1.0	7	<1.0	3.1
Chloroethane	ug/L	8	-	-	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Chloroform	ug/L	1	-	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	ug/L	8	-	-	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
cis-1,2-Dichloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethylene	ug/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,3-Dichloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
cis 1,3-Dichloropropene	ug/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dibromochloromethane	ug/L	1	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromoethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	ug/L	-	-	50	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/L	1	1.6	140	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylene Dibromide	ug/L	0.2	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
iso- Propylbenzene (Cumene)	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride (Dichloromethane)	ug/L	3	-	50	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
m+p-Xylenes	ug/L	2	20	90	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n - Propylbenzene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	ug/L	1	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
sec-Butylbenzene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	ug/L	1	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
tert-Butylbenzene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	ug/L	1	-	30	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	1	24	60	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethylene	ug/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,3-Dichloropropane	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	ug/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethene	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	ug/L	1	-	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	ug/L	8	-	-	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Vinyl Chloride	ug/L	0.5	-	2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total VOCs (calculated)	ug/L	-	-	-	9	0	0	0	3.1	0	11.8	0	5

Notes:

RDL - Reported Detection Limit (updated in 2016)

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

MW-40D = Duplicate of MW-12B

Bold indicates exceedance in aesthetic objective.

Table B-5

2016 Semi-Volatile Organic Compound (Semi-VOC) analytical results for the groundwater monitoring program
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Parameter	Units	RDL	AO	MAC	MW-4A	MW-22B	MW-24B	TH-1
1,2,3,4 - Tetrachlorobenzene	µg/L	0.50	-	-	<0.50	<0.50	<0.50	<0.50
1,2,3,5 - Tetrachlorobenzene	µg/L	0.50	-	-	<0.50	<0.50	<0.50	<0.50
1,2,3 - Trichlorobenzene	µg/L	0.50	-	-	<0.50	<0.50	<0.50	<0.50
1,2,4,5 - Tetrachlorobenzene	µg/L	0.50	-	-	<0.50	<0.50	<0.50	<0.50
1,2,4 - Trichlorobenzene	µg/L	0.50	-	-	<0.50	<0.50	<0.50	<0.50
1,2 - Dichlorobenzene	µg/L	0.5	3	200	<0.50	<0.50	<0.50	<0.50
1,3,5 - Trichlorobenzene	µg/L	0.50	-	-	<0.50	<0.50	<0.50	<0.50
1,3 - Dichlorobenzene	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
1,4 - Dichlorobenzene	µg/L	0.5	1	5	1.8	<0.50	1.3	1.2
1 - Chloronaphthalene	µg/L	1.0	-	-	<1.0	<1.0	<1.0	<1.0
1 - Methylnaphthalene	µg/L	0.20	-	-	<0.20	<0.20	0.25	<0.20
2,3,4,5 - Tetrachlorophenol	µg/L	0.4	-	-	<0.40	<0.40	<0.40	<0.40
2,3,4,6 - Tetrachlorophenol	µg/L	0.5	1	100	<0.50	<0.50	<0.50	<0.50
2,3,4 - Trichlorophenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
2,3,5,6 - Tetrachlorophenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
2,3,5 - Trichlorophenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
2,3,6 - Trichlorophenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
2,3 - Dichlorophenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
2,4,5 - Trichlorophenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
2,4,6 - Trichlorophenol	µg/L	0.5	2	5	<0.50	<0.50	<0.50	<0.50
2,4 - Dichlorophenol	µg/L	0.3	0.3	900	<0.30	<0.30	<0.30	<0.30
2,4 - Dimethylphenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
2,4 - Dinitrophenol	µg/L	2.0	-	-	<2.0	<2.0	<2.0	<2.0
2,4 - Dinitrotoluene	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
2,5 - Dichlorophenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
2,6 - Dichlorophenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
2,6 - Dinitrotoluene	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
2 - Chloronaphthalene	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
2 - Chlorophenol	µg/L	0.3	-	-	<0.30	<0.30	<0.30	<0.30
2 - Methylnaphthalene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
2 - Nitrophenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
3,3' - Dichlorobenzidine	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
3,4,5 - Trichlorophenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
3,4 - Dichlorophenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
3,5 - Dichlorophenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
4,6-Dinitro-2-methylphenol	µg/L	2.0	-	-	<2.0	<2.0	<2.0	<2.0
4 - Bromophenyl Phenyl Ether	µg/L	0.3	-	-	<0.30	<0.30	<0.30	<0.30
4 - Chloro - 3 - Methylphenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
4 - Chlorophenyl Phenyl Ether	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
4 - Nitrophenol	µg/L	1.4	-	-	<1.4	<1.4	<1.4	<1.4
Acenaphthene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Anthracene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Benzo(a)anthracene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Benzo(a)pyrene	µg/L	0.20	-	0.01	<0.20	<0.20	<0.20	<0.20
Benzo(b/j)fluoranthene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Benzo(ghi)perylene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Benzo(k)fluoranthene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Benzyl Butyl Phthalate	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
Biphenyl	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
bis (2 - Chloroethoxy)methane	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
bis (2 - Chloroethyl)ether	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
bis (2 - Chloroisopropyl)ether	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
bis (2 - Ethylhexyl)phthalate	µg/L	2.0	-	-	<2.0	<2.0	<2.0	<2.0
Chrysene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Dibenzo(a,h)anthracene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Diethyl Phthalate	µg/L	1.0	-	-	1.6	<1.0	<1.0	<1.0
Dimethyl Phthalate	µg/L	1.0	-	-	<1.0	<1.0	<1.0	<1.0
di - n - Butyl Phthalate	µg/L	2.0	-	-	<2.0	<2.0	<2.0	<2.0
di - n - Octyl Phthalate	µg/L	0.8	-	-	<0.80	<0.80	<0.80	<0.80
Diphenyl Ether	µg/L	0.3	-	-	<0.30	<0.30	<0.30	<0.30
Fluoranthene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Fluorene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Hexachlorobenzene	µg/L	0.50	-	-	<0.50	<0.50	<0.50	<0.50
Hexachlorobutadiene	µg/L	0.40	-	-	<0.40	<0.40	<0.40	<0.40
Hexachlorocyclopentadiene	µg/L	2.0	-	-	<2.0	<2.0	<2.0	<2.0
Hexachloroethane	µg/L	0.50	-	-	<0.50	<0.50	<0.50	<0.50
Indeno(1,2,3-cd)pyrene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Isophorone	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
m - Cresol & p - Cresol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
Naphthalene	µg/L	0.20	-	-	<0.20	<0.20	0.58	<0.20
Nitrobenzene	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
N - Nitrosodi - n - Propylamine	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
N - Nitrosodiphenylamine & DPA	µg/L	1.0	-	-	<1.0	<1.0	<1.0	<1.0
o - Cresol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
p - Chloroaniline	µg/L	1.0	-	-	<1.0	<1.0	<1.0	<1.0
Pentachlorobenzene	µg/L	0.50	-	-	<0.50	<0.50	<0.50	<0.50
Pentachlorophenol	µg/L	1.0	30	60	<1.0	<1.0	<1.0	<1.0
Perylene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Phenanthrene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20
Phenol	µg/L	0.5	-	-	<0.50	<0.50	<0.50	<0.50
Pyrene	µg/L	0.20	-	-	<0.20	<0.20	<0.20	<0.20

Notes:

RDL - Reported Detection Limit (updated in

Table B-6

2016 Petroleum Hydrocarbon analytical results for the groundwater monitoring program
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Parameter	Units	RDL	AO	MAC	MW-4A	MW-12B	MW-12B DUP MW40D	MW-22B	MW-24A	MW-24B	MW-25B	TH-1
Benzene	mg/L	0.001		0.005	0.0018	<0.0010	<0.0010	0.0015	<0.0010	0.0031	<0.0010	<0.0010
Toluene	mg/L	0.001	0.024	0.06	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Ethylbenzene	mg/L	0.001	0.0016	0.14	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Xylenes	mg/L	0.002	0.02	0.09	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
C6 - C10 (less BTEX)	mg/L	0.01	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
>C10-C16 Hydrocarbons	mg/L	0.05	-	-	0.052	<0.050	<0.050	<0.050	<0.050	0.083	<0.050	<0.057 (1)
>C16-C21 Hydrocarbons	mg/L	0.05	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.057 (1)
>C21-<C32 Hydrocarbons	mg/L	0.1	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.11 (1)
Modified TPH (Tier1)	mg/L	0.1	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.11

Notes:

RDL - Reported Detection Limit (updated in 2016)

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

(1) - Elevated THE RDL(s) due to limited sample

MW-40D = Duplicate of MW-12B

Table B-7

**Field duplicate analysis for Relative Percent Difference
for General Chemistry
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186**

Parameter	Units	RDL	MW-12B	MW-12B DUP MW40D	RPD
Anion Sum	me/L	N/A	1.38	1.41	2%
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	1	35	37	6%
Calculated TDS	mg/L	1	93	94	1%
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	1	<1.0	<1.0	<5xRDL
Cation Sum	me/L	N/A	1.35	1.32	2%
Hardness (CaCO ₃)	mg/L	1	39	37	5%
Ion Balance (% Difference)	%	N/A	1.1	3.300	100%
Langelier Index (@ 20C)	-	N/A	-1.35	-1.49	<5xRDL
Langelier Index (@ 4C)	-	N/A	-1.61	-1.74	<5xRDL
Nitrate (N)	mg/L	0.05	<0.050	<0.050	<5xRDL
Saturation pH (@ 20C)	Units	N/A	8.66	8.66	0%
Saturation pH (@ 4C)	Units	N/A	8.91	8.91	0%
Total Alkalinity (Total as CaCO ₃)	mg/L	5	35	37	6%
Dissolved Chloride (Cl)	mg/L	1	20	20	0%
Colour	TCU	5	22	8.8	<5xRDL
Nitrate + Nitrite (N)	mg/L	0.05	<0.050	<0.050	<5xRDL
Nitrite (N)	mg/L	0.01	<0.010	<0.010	<5xRDL
Nitrogen (Ammonia Nitrogen)	mg/L	2.5	<0.050	<0.050	<5xRDL
Total Organic Carbon (C)	mg/L	0.5	0.67	0.8	<5xRDL
Orthophosphate (P)	mg/L	0.01	0.016	0.013	21%
pH	Units	N/A	7.31	7.17	2%
Reactive Silica (SiO ₂)	mg/L	2.5	13	13	0%
Dissolved Sulphate (SO ₄)	mg/L	2	5.8	5.3	<5xRDL
Turbidity	NTU	1	78	78	0%
Conductivity	µS/cm	1	140	140	0%
Dissolved Calcium	mg/L	0.1	14	13	7%
Dissolved Magnesium	mg/L	0.1	1	0.98	2%
Phosphorus	mg/L	0.1	<0.1	<0.1	<5xRDL
Potassium	mg/L	0.1	0.89	0.94	5%
Sodium	mg/L	0.1	8	8	0%

Notes:

RDL = Reported Detection Limit

RPD = Relative Percent Difference

MW-40D = Duplicate of MW-12B

<5xRDL = Reported when analytical sample results were less than 5 times the RDL.

N/A - Not Applicable

Grey indicates RPD >5%

Table B-8 Field duplicate analysis for Relative Percent Difference for Metals
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Parameter	Units	RDL	MW-12B	MW-12B DUP MW40D	RPD
Aluminum	ug/L	5	<5.0	<5.0	<5xRDL
Antimony	ug/L	1	<1.0	<1.0	<5xRDL
Arsenic	ug/L	1	7.2	7.7	7%
Barium	ug/L	10	120	120	0%
Beryllium	ug/L	1	<1.0	<1.0	<5xRDL
Bismuth	ug/L	2	<2.0	<2.0	<5xRDL
Boron	ug/L	50	<50	<50	<5xRDL
Cadmium	ug/L	0.01	<0.010	<0.010	<5xRDL
Chromium	ug/L	1	<1.0	<1.0	<5xRDL
Cobalt	ug/L	0.4	2.3	2.3	0%
Copper	ug/L	2	<2.0	<2.0	<5xRDL
Iron	ug/L	50	5700	6100	7%
Lead	ug/L	0.5	<0.50	<0.50	<5xRDL
Manganese	ug/L	2	4200	4400	5%
Molybdenum	ug/L	2	<2.0	<2.0	<5xRDL
Nickel	ug/L	2	<2.0	<2.0	<5xRDL
Selenium	ug/L	1	<1.0	<1.0	<5xRDL
Silver	ug/L	0.1	<0.10	<0.10	<5xRDL
Strontium	ug/L	2	32	31	3%
Thallium	ug/L	0.1	<0.10	<0.10	<5xRDL
Tin	ug/L	2	<2.0	<2.0	<5xRDL
Titanium	ug/L	2	<2.0	<2.0	<5xRDL
Uranium	ug/L	0.1	<0.10	<0.10	<5xRDL
Vanadium	ug/L	2	<2.0	<2.0	<5xRDL
Zinc	ug/L	5	<5.0	<5.0	<5xRDL

Notes:

RDL = Reported Detection Limit

RPD = Relative Percent Difference

MW-40D = Duplicate of MW-12B

<5xRDL = Reported when analytical sample results were less than 5 times the RDL.

Grey indicates RPD >5%

Table B-9

**Field duplicate analysis for Relative Percent Difference
for Volatile Organic Compounds
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186**

Parameter	Units	RDL	MW-12B	MW-12B DUP MW40D	RPD
1,1 - Dichloroethane	ug/L	2	<2.0	<2.0	<5xRDL
1,1 - Dichloroethylene	ug/L	0.5	<0.50	<0.50	<5xRDL
1,1,1 - Trichloroethane	ug/L	1	<1.0	<1.0	<5xRDL
1,1,2 - Trichloroethane	ug/L	1	<1.0	<1.0	<5xRDL
1,1,1,2-Tetrachloroethane	ug/L	0.5	-	-	<5xRDL
1,1,2,2-Tetrachloroethane	ug/L	0.5	<0.50	<0.50	<5xRDL
1,2 - Dichlorobenzene	ug/L	0.5	<0.50	<0.50	<5xRDL
1,2 -Dichloroethane	ug/L	1	<1.0	<1.0	<5xRDL
1,2-Dichloropropane	ug/L	0.5	<0.50	<0.50	<5xRDL
1,3 - Dichlorobenzene	ug/L	1	<1.0	<1.0	<5xRDL
1,4 - Dichlorobenzene	ug/L	1	<1.0	<1.0	<5xRDL
Benzene	ug/L	1	<1.0	<1.0	<5xRDL
Bromodichloromethane	ug/L	1	<1.0	<1.0	<5xRDL
Bromoform	ug/L	1	<1.0	<1.0	<5xRDL
Bromomethane	ug/L	0.89	<0.50	<0.89	<5xRDL
Carbon Tetrachloride	ug/L	0.5	<0.50	<0.50	<5xRDL
Chlorobenzene	ug/L	1	<1.0	<1.0	<5xRDL
Chloroethane	ug/L	8	<8.0	<8.0	<5xRDL
Chloroform	ug/L	1	<1.0	<1.0	<5xRDL
Chloromethane	ug/L	8	<8.0	<8.0	<5xRDL
cis-1,2-Dichloroethylene	ug/L	0.5	<0.50	<0.50	<5xRDL
cis 1,3-Dichloropropene	ug/L	0.5	<0.50	<0.50	<5xRDL
Dibromochloromethane	ug/L	1	<1.0	<1.0	<5xRDL
Ethylbenzene	ug/L	1	<1.0	<1.0	<5xRDL
Ethylene Dibromide	ug/L	0.2	<0.20	<0.20	<5xRDL
Methylene Chloride (Dichloromethane)	ug/L	3	<3.0	<3.0	<5xRDL
m+p-Xylenes	ug/L	2	<2.0	<2.0	<5xRDL
o-Xylene	ug/L	1	<1.0	<1.0	<5xRDL
Styrene	ug/L	1	<1.0	<1.0	<5xRDL
Tetrachloroethylene	ug/L	1	<1.0	<1.0	<5xRDL
Toluene	ug/L	1	<1.0	<1.0	<5xRDL
trans-1,2-Dichloroethylene	ug/L	0.5	<0.50	<0.50	<5xRDL
trans-1,3-Dichloropropene	ug/L	0.5	<0.50	<0.50	<5xRDL
Trichloroethylene	ug/L	1	<1.0	<1.0	<5xRDL
Trichlorofluoromethane	ug/L	8	<8.0	<8.0	<5xRDL
Vinyl Chloride	ug/L	0.5	<0.50	<0.50	<5xRDL

Notes:

RDL = Reported Detection Limit

RPD = Relative Percent Difference

MW-40D = Duplicate of MW-12B

<5xRDL = Reported when analytical sample results were less than 5 times the RDL.

Table B-10

2016 surface water monitoring analytical results
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Parameter	Unit	RDL	CCME FWAL	SW7
Dissolved Organic Carbon	mg/L	0.5	-	-
pH	-	-	6.5-9.0	7.25
Reactive Silica as SiO ₂	mg/L	0.5	-	11
Chloride	mg/L	1	120	26
Fluoride	mg/L	0.1	0.12	-
Sulphate	mg/L	2	-	3.7
Alkalinity	mg/L	5	-	85
True Color	TCU	5	-1	46
Turbidity	NTU	0.1	-2	11
Electrical Conductivity	µS/cm	1	-	240
Nitrate + Nitrite as N	mg/L	0.05	-	0.16
Nitrate as N	mg/L	0.05	13	0.16
Nitrite as N	mg/L	0.01	0.06	<0.010
Ammonia as N	mg/L	0.03	2.22 (3)	1.2
Total Organic Carbon	mg/L	0.5	-	2.9
Ortho-Phosphate as P	mg/L	0.01	-	0.017
Total Sodium	ug/L	100	-	15000
Total Potassium	ug/L	100	-	2700
Total Calcium	ug/L	100	-	25000
Total Magnesium	ug/L	100	-	3200
Total Phosphorous	ug/L	100	-4	<100
Bicarb. Alkalinity (as CaCO ₃)	mg/L	1	-	85
Carb. Alkalinity (as CaCO ₃)	mg/L	1	-	<1.0
Hydroxide	mg/L	5	-	-
Calculated TDS	mg/L	1	-	150
Hardness	mg/L	1	-	76
Langelier Index (@20C)	NA	-	-	-0.79
Langelier Index (@ 4C)	NA	-	-	-1.04
Saturation pH (@ 20C)	NA	-	-	8.04
Saturation pH (@ 4C)	NA	-	-	8.29
Anion Sum	me/L	-	-	2.52
Cation sum	me/L	-	-	2.44
% Difference/ Ion Balance (NS)	%	-	-	1.61
Total Aluminum	ug/L	5	100 (5)	21
Total Antimony	ug/L	1	-	<1.0
Total Arsenic	ug/L	1	5	3.1
Total Barium	ug/L	1	-	250
Total Beryllium	ug/L	1	-	<1.0
Total Bismuth	ug/L	2	-	<2.0
Total Boron	ug/L	50	1500	<50
Total Cadmium	ug/L	0.01	0.09	<0.010
Total Chromium	ug/L	1	8.9	1.9
Total Cobalt	ug/L	0.4	-	1.2
Total Copper	ug/L	2	2 (6)	<2.0
Total Iron	ug/L	50	300	3400
Total Lead	ug/L	0.5	2.24 (6)	<0.50
Total Manganese	ug/L	2	-	2400
Total Molybdenum	ug/L	2	73	<2.0
Mercury	ug/L	0.026	0.026	-
Total Nickel	ug/L	2	77.58 (6)	<2.0
Total Selenium	ug/L	1	1	<1.0
Total Silver	ug/L	0.1	0.25	<0.10
Total Strontium	ug/L	2	-	61
Total Thallium	ug/L	0.1	0.8	<0.10
Total Tin	ug/L	2	-	<2.0
Total Titanium	ug/L	2	-	<2.0
Total Uranium	ug/L	0.1	15	<0.10
Total Vanadium	ug/L	2	-	<2.0
Total Zinc	ug/L	5	30	<5.0

Notes:

RDL – Reported Detection Limit

CCME FWAL = Canadian Council of Ministers of the Environment – Freshwater Aquatic Life Long Term Exposure

Grey indicates exceedance in maximum allowable concentration

(1) The mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration

(2) High flow or turbid waters: Maximum increase of 8 NTUs from background levels at any one time when background levels are between 8 and 80 NTUs. Should not increase more than 10% of background levels when background is > 80 NTUs.

(3) For pH of 7.5 and temperature of 15.

(4) Refer to CCME Fact Sheet - Phosphorus: Canadian Guidance Framework for the Management of Freshwater Systems

(5) Guideline value dependent on pH. Value given is for pH ≥ 6.5

(6) Guidelines requiring equations were calculated by the CCME website, using water hardness values to determine guidelines

Appendix C

Historical Chemistry Tables

Table A.1 - MW-4A Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	21-Mar-96	21-Mar-96	16-Apr-97	6-Apr-98	5-May-99	5-May-99	26-Jul-00	Field Dup.	Aug-01	Sep-02	19-Aug-03	19-Aug-03	25-Aug-04	25-Aug-04	25-Aug-04	18-Aug-05	18-Aug-05	23-Nov-06	1-Aug-07	1-Aug-07	28-Jul-08	28-Jul-08	10-Aug-09	27-Jul-10	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	4-Jul-13	19-Aug-14	19-Aug-14	21-Jul-15	21-Jul-15			
																			MW-40D	MW-40D	MW-40D					Dup-A																
Alkalinity (as CaCO ₃)	mg/L	5			737	621	452	429	696	681	720	718	686	664	738	680	740	800	920	920	810	890	750	810	650	670	770	860	765	782	722	753	751	751	712	708	703	706				
Ammonia (as NH ₃)	mg/L	0.03			-	13.2	11.2	11.3	10.7	16.8	18.4	10.6	10.3	27.5	26.6	31.4	<0.1	39	39	42	52	49	49	45	46	46	49	47	38	60.4	65	63.2	85.9	59.0	58.6	76.3	76.4	64.2	63.8			
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	19.8	23.1	22.8	19.2	20.8	18.6	19.4	16.2	15.8	17.9	19.7	17.4	17.8	16	16.0	17.0	17.1	15.6	15.3	15.8	15.8			
Bicarbonate (as CaCO ₃)	mg/L	5			737	621	452	429	696	681	720	718	685	664	737	679.49	739	799	911	911	810	890	753	812	649	670	770	856	765	782	722	753	751	751	712	708	703	706				
Calcium	mg/L	0.1			210	173	128	120	179	158	179	176	191	164	227	169	182	191	170	196	207	190	190	210	210	170	170	170	170	127	129	132	140	139	121	125	158	152				
Carbonate (as CaCO ₃)	mg/L	10			0.28	0	0.2	0.2	< 1	0.3	0.3	0.3	< 1	< 1	1	0.51	< 1	1	< 1	9	9	ND	ND	1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.8	22	22.7	22	21.4	22.2	23.5	24.1	20.6	21.1	19.9	17.3	17.1	18.3	20.8	18.3	19	19.3	21.2	20.7				
Chloride	mg/L	1	250		109	110	31.9	32	99.2	83.1	72.9	72.1	86.8	84.8	222	157	150	160	160	150	95	94	120	110	84	88	92	71	54	33	68	69	49	40	59	58						
Color	TCU	5	15		160	55	130	70	17	20	100	93	11	10	15	98	26	37	18	19	19	34	31	25	23	21	17	19	21	11	14	17	18	17	6	12	10	18				
Conductance (RCap)	uS/cm	1			1820	1680	968	963	1570	1580	1620	1580	1740	1650	2420	1630	1540	2260	2150	2350	2390	1800	1900	2100	2000	2000	1900	1900	1760	1950	1480	1550	1640	1650	1640	1620	1610	1550				
Dissolved Organic Carbon	mg/L	0.5			24	22.2	7.5	7.5	19	15.8	1600	1570	17.1	17.6	19.1	-	-	-	<50	<500	<500	-	-	-	-	-	-	-	8.9	54.2	54.2	<0.5	10.4	<0.5	23.9	18	<0.5	<0.5				
Hardness (as CaCO ₃)	mg/L	-			703	565	389	374	598	508	567	577	597	519	751	538.12	576	602	547	631	663	580	580	610	670	680	540	540	570	425	421	442	467	464	407	420	555	536				
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.57	2.42	0.13	6.68	8.76	9.7	19.8	13.3	8.11	0.280	0.3	1.9	1.9	13.0	3.7	3.3	9.9	11.6	14.6	13.3				
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.07						
Magnesium	mg/L	0.1			43.4	32.3	16.9	18	36.8	25.9	34.1	33.5	29.2	26.6	44.8	28.2	29.5	30.4	29.8	34.4	35.5	25	26	34	36	36	31	31	36	26.1	23.9	27.2	37.9	28.4	28.3	25.4	26.2	39	38.1			
Nitrate (as NO ₃ -)	mg/L	0.05	10																0.06	<0.05	<0.05	ND	ND	ND	-	-	0.05	0.05	0.07	0.09	0.11	0.38	0.32	0.48	0.47	<0.05	<0.05	0.08	0.1			
Nitrate + Nitrite	mg/L	0.05			< 0.05	< 0.05	0.11	0.17	0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05	1.66	< 0.05	< 0.05	0.08	< 0.05	< 0.05	ND	ND	ND	< 0.05	< 0.05	0.05	0.05	0.07	0.09	0.11	0.38	0.32	0.48	0.47	<0.05	<0.05	0.08	0.1			
Nitrite	mg/L	0.05	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	< 0.01	ND	ND	ND	-	-	< 0.01	< 0.01	ND	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05			
Orthophosphate	mg/L	0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.04	< 0.3	0.04	0.01	0.06	0.06	< 0.01	ND	0.01	0.01	< 0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	< 0.01
pH	Units	-	6.5-8.5		6.6	6.7	6.6	6.6	7	6.7	6.6	6.7	7	6.8	7.3	6.9	7	7.2	6.9	8	8	6.7	6.7	7.16	6.98	6.99	6.94	7.07	6.8													

Table A.2 - MW-12B Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	21-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	1-Aug-07	28-Jul-08	10-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	
Alkalinity (as CaCO ₃)	mg/L	5			254	139	72	254	113	68	64	151	53	93	47	74	110	43	41	40	41	57	42	44	41	45	
Ammonia (as NH ₃)	mg/L	0.03			0.12	0.25	0.09	0.48	0.46	0.18	0.3	0.26	<0.1	0.05	0.12	0.12	ND	46	0.07	ND	<0.05	<0.05	<0.03	0.03	<0.03	<0.03	
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	1.73	2.15	2.65	19.4	1.52	1.55	1.57	1.8	1.92	1.63	1.35	1.53	
Bicarbonate (as CaCO ₃)	mg/L	5			253	139	71.7	254	113	67.9	64	150	52.73	93	47	73.9	111	812	41	40	41	57	42	44	41	45	
Calcium	mg/L	0.1			93	50.5	26.7	76.1	38.9	23.9	24.6	53.5	18.7	34.4	24.9	35	45	22	17	19	15.2		27.6	16.5	17.8	22.4	
Carbonate (as CaCO ₃)	mg/L	10			0.6	0	0.3	< 1	0.2	0.1	< 1	< 1	0.25	< 1	< 1	ND	ND	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	1.75	2.28	2.77	2.16	2.22	1.53	1.33	1.75	1.86	1.59	1.75	1.77	
Chloride	mg/L	1	250		62.9	30.7	14.9	58.7	23.3	16.5	19.3	29.6	23.6	25	25	21	11	18	21	23	23	20	22	23	16	18	
Color	TCU	5	15		5	4	11	7	< 5	0.9	< 5	8	56	6	6	ND	ND	< 5	< 5	ND	6	< 5	< 5	5	< 5	12	
Conductance (RCap)	uS/cm	1			756	375	200	673	298	201	194	368	179	272	182	220	320	150	160	160	172	180	162	142	166	167	
Dissolved Organic Carbon	mg/L	0.5			51.9	2.2	0.6	7.6	1.3	194	< 0.5	2.8	1.5	-	< 10	-	-	-	-	-	1.1	< 0.5	< 0.5	< 0.5	< 0.5	0.6	
Hardness (as CaCO ₃)	mg/L	-			272	150	77	222	107	69.1	71.3	157	56.41	101	70.8	97	120	65	52	54	43.7	75.3	77.2	47.0	51.4	60.1	
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	-	0.48	2.9	2.22	19.7	18.7	0.650	8.2	1.4	1.8	1.3	12.8	7.2	
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-	-1.37	-0.723	-0.149	-1.12	-1.11	-1.26	-1.18	-0.59	-0.93	-1.32	-1.35	-1.47	
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-	-1.77	-0.974	-0.399	-1.37	-1.36	-1.52	-1.5	-0.91	-1.25	-1.64	-1.67	-1.79	
Magnesium	mg/L	0.1			9.6	5.7	2.5	7.8	3.5	2.3	2.4	5.7	2.36	3.6	2.1	2.5	2.7	2.4	2.1	1.7	1.4	1.6	2.0	1.4	1.7	1	
Nitrate (as NO ₃ -)	mg/L	0.05			10	-	-	-	-	-	-	-	-	-	0.07	ND	0.07	-	0.05	0.12	0.22	0.11	0.65	< 0.05	< 0.05	< 0.05	
Nitrate + Nitrite	mg/L	0.05			< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.05	1.94	0.49	0.65	0.07	ND	0.07	< 0.05	0.05	0.12	0.22	0.11	0.65	< 0.05	< 0.05	< 0.05	
Nitrite	mg/L	0.05			1	-	-	-	-	-	-	-	-	-	< 0.01	ND	ND	-	< 0.01	ND	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Orthophosphate	mg/L	0.01			< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.01	< 0.01	< 0.01	< 0.3	0.01	< 0.01	ND	0.02	< 0.01	< 0.01	ND	0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	
pH	Units	-	6.5-8.5		7.4	7.2	7.6	7.3	7.3	7.2	7.8	7.6	7.7	7.7	7	7.22	7.52	7.25	7.39	7.20	7.6	7.8	7.6	7.4	7.37	7.11	
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	-	< 0.1	ND	ND	-	< 0.1	ND	< 0.1	< 0.1	< 0.02	0.05	0.04	< 0.02	
Potassium	mg/L	0.1			3.2	1.9	1.4	3.4	2	1.3	1.5	3.1	1.2	1.7	1	1	1.2	1.9	8.8	1.2	0.9	0.8	0.8	0.9	1.3	0.7	
Reactive Silica (as SiO ₂)	mg/L	0.5			10.9	12	8.3	14.5	13.7	12.8	11	12.8	12.1	13	12	10	10	12	12	11	11.9	10.7	10.7	12.1	12.5	12.2	
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	-	8.37	7.94	7.67	8.37	8.50	8.46	8.78	8.39	8.53	8.72	8.72	8.58	
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	-	8.77	8.19	7.92	8.62	8.75	8.72	9.1	8.71	8.85	9.04	9.04	8.9	
Sodium	mg/L	0.1	200		39.7	14.4	8.5	49.9	17.4	9.5	8	22.6	8	11.4	6.9	6.7	6.3	16	20	8.1	6.2	5	6.6	9.8	8.8	6.2	
Sulfate	mg/L	2	500		< 2	8	4	6	5	3	5	9	4.2	5	4	3.7	5	4	6	4	4	20	20	5	4	6	
TDS (Calculated)	mg/L	1	500		372		110	370	170	111	111	236	102.45	153	105	125	149	108	116	98	81	94	107	88	83	89	
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	0.5	ND (1)	1.0	ND (1)	3.6	< 0.5	< 0.5	1.4	< 0.5	< 0.5	< 0.5		
Turbidity	NTU	0.1	0.1-1	0.1-1	264	449	5.1	0.8	0.4	0.9	0.3	>1000	3.8	288	82.2	110	890	280	170	290	108	101	222	344	140	334	

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table A.3 - MW-19B Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	12-Dec-07	29-Jul-08	11-Aug-09	29-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			40	31	42	46	38	40	38	37	35	37	37	31	31	37	31	35	32
Ammonia (as NH ₃)	mg/L	0.03			< 0.05	< 0.05	<0.05	<0.1	< 0.05	<0.05	ND	ND	ND	<0.05	ND	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03
Anion Sum	me/L	-			-	-	-	-	1.46	1.57	1.57	1.55	1.71	1.82	1.7	1.82	1.78	1.96	1.8	1.78	
Bicarbonate (as CaCO ₃)	mg/L	5			39.8	31	42	45.06	38	40	37.9	37	35	37	36	31	36	37	31	35	32
Calcium	mg/L	0.1			16.5	14.8	35.6	14.5	18.4	16.8	17	17	16	18	19	15.6	20	18.4	19.5	22.6	23.5
Carbonate (as CaCO ₃)	mg/L	10			0.2	< 1	<1	0.85	< 1	<1	ND	ND	<1	<1	<10	<10	<10	<10	<10	<10	<10
Cation Sum	me/L	-								1.62	1.62	1.6	1.6	1.72	1.77	1.4	1.81	1.72	1.80	2	1.81
Chloride	mg/L	1	250		25	21.9	26.8	19.5	25	16	21	21	22	26	30	25	31	27	36	30	31
Color	TCU	5	15		8	< 5	<5	198	11	<5	ND	ND	<5	ND	<5	<5	7	<5	<5	<5	<5
Conductance (RCAp)	uS/cm	1			182	179	198	164	192	152	170	160	170	190	170	194	201	186	202	204	192
Dissolved Organic Carbon	mg/L	0.5			184	< 0.5	<0.5	1	-	0.5	-	-	-	-	-	<0.5	0.7	<0.5	<0.5	<0.5	<0.5
Hardness (as CaCO ₃)	mg/L	-			49.4	49.7	108	44.52	55	48.5	50	50	47	53	56	46.4	57.8	54.6	58.6	67.6	66.9
Ion Balance	%	-			-	-	-	-	5.45	1.57	0.98	1.59	0.290	1.39	9.5	0.2	1.6	4.3	5.2	0.9	
Langelier Index (@ 20C)	-	-			-	-	-	-	-1.31	-0.972	-0.642	-0.426	-0.360	-0.534	-1.3	-0.63	-0.95	-0.98	-0.92	-1.07	
Langelier Index (@ 4C)	-	-			-	-	-	-	-1.71	-1.22	-0.893	-0.677	-0.611	-0.785	-1.62	-0.95	-1.27	-1.30	-1.24	-1.39	
Magnesium	mg/L	0.1			2	3.1	4.7	2.02	2.2	1.6	2	1.9	1.9	2.2	2.1	1.8	1.9	2.1	2.4	2.7	2
Nitrate (as NO ₃ ⁻)	mg/L	0.05	10	-	-	-	-	-	1.68	1.8	1.9	2	1.8	1.9	3.74	1.74	2.14	2.26	1.8	1.96	
Nitrate + Nitrite	mg/L	0.05			1.5	1.6	1.64	1.76	1.6	1.7	1.8	1.9	2	1.8	1.9	3.74	1.74	2.14	2.26	1.8	1.96
Nitrite	mg/L	0.05	1	-	-	-	-	-	0.02	ND	ND	<0.01	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Orthophosphate	mg/L	0.01			0.02	0.11	0.02	<0.3	0.03	<0.01	0.03	0.03	0.02	0.03	0.03	0.04	0.03	0.03	0.03	0.03	
pH	Units	-	6.5-8.5		7.7	7.8	7.8	8.3	7.9	7.3	7.57	7.91	8.18	8.17	7.98	7.6	8.1	7.8	7.83	7.77	7.64
Phosphorus	mg/L	0.02			-	-	-	-	<0.1	ND	ND	ND	<0.1	ND	<0.1	<0.02	0.02	0.04	0.04	<0.02	
Potassium	mg/L	0.1			2.3	3	4.3	2.3	3.1	3.3	2.6	2.7	2.9	3.0	3.0	2.4	1.5	2.6	3.0	3.5	2.3
Reactive Silica (as SiO ₂)	mg/L	0.5			9.9	9.8	9.8	10	10	11	10	11	11	10	10	10.7	10.4	10.9	10.6	10.4	9.9
Saturation pH @ 20C	Units	-			-	-	-	-	8.61	8.54	8.55	8.61	8.53	8.51	8.9	8.73	8.75	8.81	8.69	8.71	
Saturation pH @ 4C	Units	-			-	-	-	-	9.01	8.79	8.8	8.86	8.78	8.77	9.22	9.05	9.07	9.13	9.01	9.03	
Sodium	mg/L	0.1	200		12.4	13.2	13.9	12.7	13.9	13	13	12	13	13	13	9.5	13.8	13.0	12.7	12.8	9.5
Sulfate	mg/L	2	500		4	19	6	4.3	6	4	4.2	4	4	4	5	5	5	6	8	6	6
TDS (Calculated)	mg/L	1	500		103	111	134	94.68	109	97	100	101	101	108	113	94	103	101	110	107	102
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	ND	ND	<0.05	ND	0.6	0.7	<0.5	0.6	1.2	0.5	
Turbidity	NTU	0.1	0.1-1	0.1-1	4.4	14.1	>1000	36	282	8.4	120	200	490	63	8.5	14.5	224	174	84	136	50.8

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

** Something stuck in Well could not sample in August 07. Cleared well for sampling in December 07.

Table A.4 - MW-20A Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	18-Aug-05 MW-20a Dup	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	29-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			26	13	6	12	25	18	22	13	-	26	6	7	8	28	7	13	23	6	11
Ammonia (as NH ₃)	mg/L	0.03			< 0.05	< 0.05	< 0.05	0.06	<0.1	< 0.05	<0.05	ND	-	1.5	0.76	0.16	ND	1.56	0.22	0.09	3.24	0.21	<0.03
Anion Sum	me/L	-			-	-	-	-	-	2.05	2.11	-	-	2.85	2.36	2.23	2.26	2.35	2.03	2.59	2.61	1.96	1.75
Bicarbonate (as CaCO ₃)	mg/L	5			25.9	13	6	12	24.94	18	22	13.1	-	26	6	7	8	28	26	13	23	6	11
Calcium	mg/L	0.1			23.2	17.6	12.4	16.5	17.9	21.5	24.7	25	-	32	28	25	24	21.7	28.1	25.4	22.9	22.9	19.9
Carbonate (as CaCO ₃)	mg/L	10			0.1	0	< 1	<1	0.05	< 1	<1	ND	-	ND	<1	<1	<10	<10	<10	<10	<10	<10	<10
Cation Sum	me/L	-			-	-	-	-	-	2.13	2.29	-	-	2.93	3.21	2.49	2.20	2.18	2.62	2.48	2.56	2.28	2
Chloride	mg/L	1	250		34.7	35.5	32.1	39.6	42	43	48	57	-	67	76	69	67	53	47	76	70	61	46
Color	TCU	5	15		< 5	< 5	< 5	<5	15	< 5	<5	ND	-	7	6	20	ND	<5	<5	<5	<5	<5	<5
Conductance (RCAp)	uS/cm	1			202	175	142	188	199	223	241	250	250	320	280	280	260	281	273	289	305	274	194
Dissolved Organic Carbon	mg/L	0.5			< 0.5	1.79	< 0.5	<0.5	1.3	-	<5	-	-	-	-	-	-	<0.5	0.5	<0.5	1.4	0.6	0.9
Hardness (as CaCO ₃)	mg/L	-			68.2	53.8	36.7	51.5	53.84	64	69.9	77	-	95	81	72	68	64.1	79.6	71.2	68.3	66.2	57.1
Ion Balance	%	-			-	-	-	-	-	2	4.14	-	-	1.42	15.3	5.51	1.35	3.9	12.8	2.1	1.0	7.6	6.7
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-1.71	-1.73	-	-	-1.92	-2.93	-2.79	-2.55	-1.22	-1.23	-2.28	-2.00	-3.08	-2.74
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-2.11	-1.98	-	-	-2.17	-3.18	-3.05	-2.80	-1.54	-1.55	-2.60	-2.32	-3.4	-3.06
Magnesium	mg/L	0.1			2.5	2.4	1.4	2.5	2.22	2.5	2	3.3	-	3.6	2.8	2.4	2.1	2.4	2.3	1.9	2.7	2.2	1.8
Nitrate (as NO ₃ ⁻)	mg/L	0.05	10		-	-	-	-	-	1.2	1.2	-	-	3.4	-	0.30	1.4	1.5	0.5	0.58	1.05	0.75	1.45
Nitrate + Nitrite	mg/L	0.05			1.59	1.34	0.41	1.04	1.19	1.1	1.2	1.2	-	3.4	0.22	0.31	1.4	1.5	0.5	0.58	1.05	0.75	1.45
Nitrite	mg/L	0.05	1		-	-	-	-	-	<0.01	ND	-	-	0.06	-	0.01	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Orthophosphate	mg/L	0.01			< 0.01	< 0.01	< 0.01	<0.01	<0.3	0.01	<0.01	ND	-	0.04	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH	Units	-	6.5-8.5		7.5	6.7	6.4	7.3	7.3	7.2	7	7.11	6.92	6.54	6.23	6.30	6.55	7.6	7.5	6.8	6.9	6.38	6.51
Phosphorus	mg/L	0.02			-	-	-	-	-	<0.1	ND	-	-	ND	-	<0.1	ND	<0.1	<0.02	<0.02	0.02	<0.02	<0.02
Potassium	mg/L	0.1			1.5	1.1	0.9	1.3	1.3	1.5	1.6	1.8	-	2.9	2	1.7	2.3	2.4	1.5	2.0	4.1	2.9	1.8
Reactive Silica (as SiO ₂)	mg/L	0.5			8.3	6.9	3.9	6.3	5.9	7.4	6.9	6.4	-	7.3	4.7	4.9	4.3	7.1	7.5	4.9	4.9	2.7	4
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	8.71	8.84	-	8.46	9.16	9.09	9.10	8.82	8.73	9.08	8.88	9.46	9.25
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	9.11	9.09	-	8.71	9.41	9.35	9.35	9.14	9.05	9.40	9.20	9.78	9.57
Sodium	mg/L	0.1	200		12.5	9.4	7.3	10.5	12.7	14.3	15.8	16	-	19	23	18	18	15.5	20.9	22.7	19.7	17.8	18.6
Sulfate	mg/L	2	500		8	5	5	8	6.9	9	8	6.8	-	9	4	5	5	9	<0.1	7	5	3	6
TDS (Calculated)	mg/L	1	500		113	92	68	97	105.11	115	126	131	-	175	160	139	134	131	127	146	147	119	107
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	0.7	-	5	<0.5	1.8 (2)	ND (1)	0.6	0.5	1.4	2.5	<0.5	1.1
Turbidity	NTU	0.1	0.1-1	0.1-1	0.6	2.6	< 0.1	225	25	21.4	42.8	36	-	200	110	>1000	96	25.3	39.4	638	187	75.5	6.5

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table A.5 - MW-21C Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	6-Apr-98	5-May-99	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	18-Aug-05 MW-21C Dup	23-Nov-06	12-Dec-07	28-Jul-08	10-Aug-09	26-Jul-10	14-Sep-11	4-Oct-12	20-Aug-14	21-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			0.02	0	0	<1	0	0	23	26	23	33	13	-	25	23	27	24	26	27	27	26	24	
Ammonia (as NH ₃)	mg/L	0.03			0.24	0.15	0.28	0.31	0.3	0.3	0.26	<0.05	<0.1	<0.05	<0.05	ND	ND	ND	<0.05	ND	<0.05	<0.03	<0.03	<0.03	<0.03	
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	0.9	0.526	-	0.636	0.6	0.660	0.61	0.69	0.67	0.70	0.65	0.61
Bicarbonate (as CaCO ₃)	mg/L	5			0.02	0	0	<1	0	0	0	23	25.93	23	33	13.3	-	25	23	27	24	26	27	27	26	24
Calcium	mg/L	0.1			6.5	5.9	7.4	7	6.5	6.4	14.2	6.6	6.5	8.3	6.9	-	7.1	7.2	7.4	6.5	5.6	5.1	5.7	7.2	5	
Carbonate (as CaCO ₃)	mg/L	10			27	25	25	22	24	24	27	<1	0.06	<1	<1	ND	-	ND	ND	<1	<1	<10	<10	<10	<10	<10
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	0.79	0.705	-	0.733	0.72	1.54	0.68	0.57	0.51	0.62	0.71	0.52
Chloride	mg/L	1	250		<2	<2	<2	<2	<2	<2	4.5	4	4	6	3.6	-	4	4	4	4	5	4	5	4	4	
Color	TCU	5	15		<3	26	19	26	71	80	41	16	>1000	41	12	ND	-	ND	8	31	18	8	23	12	<5	<5
Conductance (RCap)	uS/cm	1			73	67	69	67.1	72	69.8	69.6	72	69	68	79	69	-	67	70	72	60	72	66	70	68	70
Dissolved Organic Carbon	mg/L	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	74	0.5	0.5	-	<50	-	-	-	-	-	<0.5	<0.5	<0.5	1	<0.5	
Hardness (as CaCO ₃)	mg/L	-			27	25	25	22	24	24	27	58.5	23.81	22.4	27.7	24	-	25	25	26	23	19.7	18.1	20.8	25	18.3
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	-	6.82	14.5	-	7.1	9.09	40.0	5.43	9.2	13.3	6.1	4.3	7.7
Langlier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-	-1.89	-2.42	-	-2.06	-2.22	-1.85	-2.15	-2.08	-2.1	-2.05	-2.03	-2.79
Langlier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-	-2.29	-2.67	-	-2.31	-2.47	-2.11	-2.4	-2.42	-2.37	-2.35	-3.11	
Magnesium	mg/L	0.1			22	21	27	24.9	23.2	23.6	22.2	5.6	1.78	1.5	1.7	1.6	-	1.7	1.6	1.7	1.5	1.4	1.3	1.6	1.7	1.4
Nitrate (as NO ₃ -)	mg/L	0.05		10	-	-	-	-	-	-	-	-	-	-	0.42	0.31	-	0.33	0.35	0.32	0.31	0.4	0.26	0.32	0.25	0.27
Nitrate + Nitrite	mg/L	0.05			0.31	0.32	0.4	0.48	0.41	0.38	0.38	0.33	0.3	0.24	0.42	0.31	0.29	0.33	0.35	0.32	0.31	0.4	0.26	0.32	0.25	0.27
Nitrite	mg/L	0.05		1											<0.01	ND	-	ND	ND	<0.01	ND	<0.05	<0.05	<0.05	<0.05	<0.05
Orthophosphate	mg/L	0.01			11.8	12.2	12.3	12.4	11.6	11.6	0.35	<0.3	0.59	0.14	ND	-	0.35	0.38	0.06	0.38	0.41	0.4	0.31	0.39	0.2	
pH	Units	-	6.5-8.5		6.8	6.6	6.7	6.8	6.9	6.8	7	7.2	7.4	7	7.1	6.92	-	7	6.87	7.17	6.96	7.3	7.3	7.3	7.24	6.67
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	-	0.4	0.4	-	0.4	0.4	0.2	0.4	0.3	0.28	0.35	0.45	0.07
Potassium	mg/L	0.1			2	1.3	1.6	1.4	1.5	1.5	1.2	4.1	2.6	1.9	1.6	1.7	-	1.7	1.6	10	1.6	1.2	1	1.3	1.8	1.1
Reactive Silica (as SiO ₂)	mg/L	0.5			4	4	4	4.6	4.2	4.6	5.1	11.7	11.8	11	12	6.5	-	12	12	12	12	12.2	12.6	12.2	11.9	10.4
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	-	8.99	9.34	-	9.06	9.09	9.02	9.11	9.38	9.4	9.35	9.27	9.46
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	-	9.39	9.59	-	9.31	9.34	9.28	9.37	9.7	9.72	9.67	9.59	9.78
Sodium	mg/L	0.1	200		4.1	3.5	3.5	4	4.6	4.6	4.7	2.2	4.3	4.6	4.3	4.3	-	4.5	4.2	17	4.3	3.4	2.9	4.0	3.7	3
Sulfate	mg/L	2	500		27	25	25	22	24	24	27	4	<2.0	6	<2	6.6	-	ND	ND	<2	ND	<2	<2	<2	<2	<2
TDS (Calculated)	mg/L	1	500		47	-	49	48	48	49	50	62	48.98	50	58	40.6	-	48	47	71	47	34	32	35	30	
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	ND	-	ND	ND	8 (1)	ND (1)	<0.5	<0.5	<0.5	<0.5	<0.5	
Turbidity	NTU	0.1	0.1-1	0.1-1	1.1	518	55	97	45.8	46.1	32.6	>1000	7.7	>1000	291	920	-	50	>1000	910	190	42.9	4.5	220	923	7390

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table A.6 - MW-22A Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	26-Jul-00 Lab Dup.	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	18-Aug-05 MW-22A Dup	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			309	1080	1020	1010	1030	1130	1020	1020	1170	933	100	880	690	710	600	520	460	450	72	395	-	411	328	379
Ammonia (as NH ₃)	mg/L	0.03			4.4	32	34.5	39	60	69.5	69.5	71.4	72	<0.1	< 0.05	58	42	-	31	31	27	19	6.02	22.3	-	19.4	20.4	12
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	-	22.8	15.7	-	15	13	10.3	10.4	7.79	9.13	347	9.46	6.95	8.43
Bicarbonate (as CaCO ₃)	mg/L	5			309	1080	1020	1010	1030	1130	1020	1020	1170	931.24	99	879	689	-	597	524	460	450	72	395	347	411	328	379
Calcium	mg/L	0.1			105	229	230	201	179	163	156	158	127	104	30.3	117	100	100	98	99	74	73	19.3	73.4	77.2	73.4	62.8	89.3
Carbonate (as CaCO ₃)	mg/L	10			0.07	0	0.6	< 1	0.8	2.7	< 1	2	3	1.75	< 1	<1	ND	-	ND	<1	<1	<10	<10	<10	<10	<10	<10	<10
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	18.8	16	-	16.3	16.3	12.8	10.7	5.57	9.86	8.85	10.80	9.1	11.3	
Chloride	mg/L	1	250		99.3	330	312	350	309	311	273	278	223	176	13	180	68	68	110	89	39	50	193	43	23	44	14	30
Color	TCU	5	15		45	32	140	34	45	28	31	32	26	334	< 5	44	35	30	16	11	9	10	<5	132	<5	7	64	10
Conductance (RCap)	uS/cm	1			971	2860	2840	3130	3180	3510	3140	3190	3260	2180	235	2000	1400	-	1500	1300	1000	990	887	852	707	920	740	854
Dissolved Organic Carbon	mg/L	0.5			36.3	44.5	35.1	38.5	34	3270	41.5	41	31.1	49	-	294	-	-	-	-	-	-	2.3	12.6	<0.5	13.2	<0.5	<0.5
Hardness (as CaCO ₃)	mg/L	-			325	858	879	762	712	666	611	617	516	397.23	93.8	467	380	-	360	360	270	250	71.7	223	282	244	212	256
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	-	9.71	0.883	-	3.93	11.4	10.6	1.51	16.6	3.8	7.6	6.5	13.4	14.6	
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-	0.38	-0.141	-	-0.101	0.19	-0.0290	-0.165	-1.61	-0.19	-0.22	-0.38	-0.37	-0.63	
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-	-0.02	-0.388	-	-0.348	-0.057	-0.276	-0.413	-1.93	-0.51	-0.54	-0.70	-0.69	-0.95	
Magnesium	mg/L	0.1			15.2	69.6	74	63.2	64.3	63	53.8	54	48.7	33.4	4.4	42.5	30	30	28	28	20	17	5.7	9.6	21.6	14.7	13.4	7.9
Nitrate (as NO ₃ -)	mg/L	0.05		10	-	-	-	-	-	-	-	-	-	-	<0.05	ND	-	ND	-	<0.05	<0.05	9.48	0.18	0.20	<0.05	<0.05	<0.05	
Nitrate + Nitrite	mg/L	0.05			< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.06	< 0.05	< 0.05	ND	-	ND	< 0.05	< 0.05	< 0.05	9.48	0.18	0.20	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	0.05		1	-	-	-	-	-	-	-	-	-	-	-	0.04	ND	ND	ND	-	< 0.01	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05		
Orthophosphate	mg/L	0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.07	0.01	< 0.01	< 0.3	< 0.01	< 0.01	ND	ND	ND	< 0.01	< 0.01	0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
pH	Units	-	6.5-8.5		6.4	6.6	6.8	7	6.9	7.4	7	7.2	7.4	7.3	7.9	6.9	6.54	-	6.66	6.99	6.93	6.8	6.9	7	7.0	6.8	6.96	6.5
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	-	-	< 0.1	ND	ND	ND	-	0.2	0.2	< 0.1	< 0.01	< 0.02	0.18	0.31	< 0.02
Potassium	mg/L	0.1			5.9	23.9	34.1	38.2	50.7	68.6	69	70.3	72.8	51	4.9	52.3	43	43	42	37	36	30	14.5	25.3	25.6	21.9	25.6	22.1
Reactive Silica (as SiO ₂)	mg/L	0.5			14.2	23	24	21	19.5	20.3	18	18	17.6	20.5	8.5	19	21	20	21	19	20	19	12.1	17.2	18.6	18.4	18.1	16.8
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	-	-	6.52	6.68	-	6.76	6.8	6.96	6.97	8.51	7.19	7.22	7.18	7.33	7.13
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	-	-	6.92	6.93	-	7.01	7.05	7.21	7.21	8.83	7.51	7.54	7.50	7.65	7.45
Sodium	mg/L	0.1	200		59.9	208	252	276	254	225	270	267	258	267	9.4	91.2	83	82	120	96	78	50	76.2	22.4	52.7	41.4	30.3	41.9
Sulfate	mg/L	2	500		4	< 2	< 2	3	< 2	< 2	5	7	2	3.5	< 2	7	ND	ND	< 2	< 2	< 2	11	< 2	< 2	< 2	< 2	< 2	
TDS (Calculated)	mg/L	1	500		495	-	1590	1610	1570	1620	1550	1560	1540	1215.26	133	1110	836	-	834	774	611	574	413	501	416	527	409	516
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	-	12	-	15	11	10	8	4.7	18.6	3.0	38.7	10	<0.5	
Turbidity	NTU	0.1	0.1-1	0.1-1	342	671	66	6.3	6.4	3.1	4	4.8	>1000	96	0.6	666	490	-	400	500	400	450	469	256	2			

Table A.7 - MW-22B Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	20-Dec-94	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			684	704	857	728	766	597	446	711	685	783	400	790	800 (1)	440	400	430	520	704	693	710	691	632	612
Ammonia (as NH ₃)	mg/L	0.03			4.1	0.48	0.08	0.17	< 0.05	0.15	< 0.05	0.37	< 0.05	< 0.1	0.18	0.62	0.06	27	0.28	0.38	0.24	1.1	1.34	1.95	2.25	1.56	1.82
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	-	23.2	22.8	10.2	14.6	14.5	16.5	20	19	19.8	18.9	15.7	16.9
Bicarbonate (as CaCO ₃)	mg/L	5			683	703	856	725	762	596	445	710	683	780.66	399	789	797	444	404	428	519	704	693	710	691	632	612
Calcium	mg/L	0.1			207	242	291	262	293	270	209	316	270	219	298	286	320	72	320	280	260	280	274	270	245	259	270
Carbonate (as CaCO ₃)	mg/L	10			0.51	1	1	2.7	3.6	0.9	1.1	1	2	2.32	1	<1	ND	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	-	21.8	23.6	10.2	24.5	21.9	20.2	22.1	21	21.5	19.2	19.8	19.9
Chloride	mg/L	1	250		166	143	162	152	215	224	231	282	287	287	280	260	42	230	210	220	210	182	199	178	110	165	
Color	TCU	5	15		13	86	12	15	8	15	10	11	19	90	43	13	22	7	16	10	13	15	14	9	11	10	<5
Conductance (RCap)	uS/cm	1			1810	1770	2190	1810	1900	2050	1840	2520	2450	2150	2500	2490	1900	1100	1800	1900	1800	2070	1680	1720	1740	1670	1440
Dissolved Organic Carbon	mg/L	0.5			106	99	250	12.1	18.4	14.7	1710	24.4	16.4	28.3	-	<500	-	-	-	-	37.6	27	<0.5	<0.5	23.4	9.2	
Hardness (as CaCO ₃)	mg/L	-			624	726	865	793	882	812	661	968	845	684.38	892	856	940	260	950	830	780	842	812	827	724	762	746
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	-	-	2.97	1.68	0.148	25.3	20.2	10.1	4.8	5	4.0	0.9	11.5	8.2
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-	-	0.92	0.796	-0.252	0.913	0.786	0.713	0.9	0.99	1.19	0.84	1.04	0.52
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-	-	0.52	0.551	-0.5	0.667	0.540	0.467	0.58	0.67	0.87	0.52	0.72	0.2
Magnesium	mg/L	0.1			26	29.5	33.7	33.1	36.5	33.4	33.7	43.4	41.5	33.4	36	34.4	36	18	37	33	31	34.7	31.1	37.2	27.3	28.1	17.5
Nitrate (as NO ₃ -)	mg/L	0.05		10	-	-	-	-	-	-	-	-	-	-	<0.05	0.05	1.5	-	<0.05	0.08	0.14	0.08	0.33	0.59	<0.05	<0.05	
Nitrate + Nitrite	mg/L	0.05			< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	1.5	< 0.05	< 0.05	0.080	0.14	0.08	0.33	0.59	<0.05	<0.05	
Nitrite	mg/L	0.05	1		-	-	-	-	-	-	-	-	-	-	-	<0.01	0.02	0.03	-	<0.01	<0.01	<0.05	<0.05	<0.25	<0.05	<0.05	
Orthophosphate	mg/L	0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.3	< 0.01	0.01	ND	ND	< 0.01	< 0.01	< 0.01	0.01	0.01	< 0.01	< 0.01	< 0.01	
pH	Units	-	6.5-8.5		6.9	7	7.1	7.6	7.7	7.2	7.4	7.3	7.5	7.5	7.5	7.1	6.94	6.72	7.35	7.25	7.12	7.3	7.4	7.6	7.3	7.51	6.99
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	<0.1	<0.1	<0.02	<0.02	<0.02	
Potassium	mg/L	0.1			14.1	7.5	7.5	7.7	8	7.4	8.5	9.4	8.4	8.3	11.4	8.3	8	35	8.7	14	8.2	5.6	5.6	6.1	8.4	9.4	4.9
Reactive Silica (as SiO ₂)	mg/L	0.5			13.6	13.6	15.5	17.1	17.1	16.2	15	16.2	14.8	17.1	12	17	18	19	17	18	18.5	20.3	18.6	18.9	17.8	15.9	
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	-	-	6.18	6.14	6.97	6.44	6.46	6.41	6.4	6.41	6.46	6.47	6.47	
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	-	-	6.58	6.39	7.22	6.68	6.71	6.65	6.72	6.73	6.73	6.78	6.79	6.79
Sodium	mg/L	0.1	200		152	90.1	76.8	71.1	59.7	60.2	64.4	80.8	69.8	73	98.5	103	100	46	110	100	92	98.1	89.7	103	84.8	84.7	93.1
Sulfate	mg/L	2	500		14	< 2	< 2	< 2	< 2	< 2	< 2	2	3	<2.0	11	<2	ND	ND	<2	<2	<2	<2	<10	<2	<2	<2	
TDS (Calculated)	mg/L	1	500		1010	-	-	982	1090	972	831	1180	1110	1109.66	987	1190	1210	549	982	929	954	1070	1020	1050	982	887	939
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	-	-	23	9.3	20	17	19	38	24.6	<0.5	32.6	23.2	9.2
Turbidity	NTU	0.1	0.1-1	0.1-1	459	< 1000	420	14.7	0.4	2.4	1.7	0.3	>1000	26	>1000	>1000	180	390	190	180	330	265	147	69.6	138.0	4170	589

Notes:

RDL - Reported Detection Limit (updated in 2015)

Table A.8 - MW-22C Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			42	42	44	68	76	88	118	98	103	820	95	100	110	120	140	140	133	126	147	145	131	133
Ammonia (as NH ₃)	mg/L	0.03			< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.19	<0.1	49	<0.05	ND	ND	<0.05	<0.05	0.07	<0.05	<0.03	0.04	<0.03	<0.03	
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	2.28	2.4	2.82	3.09	3.49	3.56	3.46	3.26	3.87	3.94	3.41	3.68
Bicarbonate (as CaCO ₃)	mg/L	5			41.6	42	43.5	67.7	75.4	87.4	117	97	101.99	819	95	99.4	112	123	137	137	133	126	147	145	131	133
Calcium	mg/L	0.1			9.2	10.4	13.7	19	22.2	26.1	36.5	27.3	28.6	132	28.9	34	39	41	46	47	43.8	55.2	52.5	52.4	59.1	64.9
Carbonate (as CaCO ₃)	mg/L	10			0.31	0	0.4	< 1	0.6	0.5	< 1	<1	0.96	< 1	<1	ND	ND	<1	1	<10	<10	<10	<10	<10	<10	<10
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	2.36	2.65	3.03	3.42	3.78	3.62	3.24	3.74	3.90	4.12	4.34	4.35
Chloride	mg/L	1	250		4.4	5	5.4	6.3	8.1	10.1	11.8	11.9	11.2	140	12	14	20	22	26	29	28	26	33	37	28	36
Color	TCU	5	15		< 3	5	15	21	24	7	< 5	<5	68	25	8	ND	ND	<5	<5	<5	<5	<5	<5	<5	<5	<5
Conductance (RCAp)	uS/cm	1			99	98	107	155	174	205	262	224	230	2330	230	230	280	300	350	360	367	312	372	395	385	382
Dissolved Organic Carbon	mg/L	0.5			9.9	0.8	< 0.5	< 0.05	< 0.05	214	< 0.5	<0.5	1.2	-	1.2	-	-	-	-	1.5	2.7	<0.5	1.7	<0.5	3.4	
Hardness (as CaCO ₃)	mg/L	-			29	32	42	59.4	69	82	113	86.3	88.59	506	89.5	100	120	130	150	150	134	162	162	163	183	190
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	-	1.55	4.92	3.71	5.07	3.99	0.84	3.2	6.9	0.4	2.2	12	8.4
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-	-0.41	-0.306	-0.102	0.19	0.417	0.047	0.15	0.33	0.17	0.25	0.35	0.03
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-	-0.81	-0.557	-0.352	-0.06	0.167	-0.203	-0.17	0.01	-0.15	-0.07	0.03	-0.29
Magnesium	mg/L	0.1			1.4	1.5	2	2.9	3.3	4.1	5.4	4.4	4.17	42.8	4.2	4.8	5.9	6	7.1	7.1	6.1	5.9	7.5	7.8	8.5	6.9
Nitrate (as NO ₃ -)	mg/L	0.05		10	-	-	-	-	-	-	-	-	-	-	<0.05	ND	ND	-	<0.05	<0.05	0.09	0.07	<0.05	<0.05	<0.05	<0.05
Nitrate + Nitrite	mg/L	0.05			< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.06	< 0.05	< 0.05	ND	ND	< 0.05	< 0.05	< 0.05	0.09	0.07	< 0.05	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	0.05		1	-	-	-	-	-	-	-	-	-	-	<0.01	ND	ND	-	< 0.01	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Orthophosphate	mg/L	0.01			< 0.01	< 0.01	0.02	0.02	< 0.01	< 0.01	0.02	0.02	< 0.3	< 0.01	0.11	ND	ND	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
pH	Units	-	6.5-8.5		7.9	7.9	8	7.7	7.9	7.8	7.7	8	8	7	7.6	7.52	7.63	7.87	8.00	7.62	8	8.1	7.9	8.0	8.08	7.71
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	<0.1	<0.1	<0.02	0.02	<0.02	
Potassium	mg/L	0.1			2.9	2.9	2.9	3.6	4.2	4.1	5	4.4	4.5	61.7	4.7	4.9	5.4	5.8	8.1	6.1	4.8	5	5.3	6.5	6.9	5.1
Reactive Silica (as SiO ₂)	mg/L	0.5			8.3	8.1	8.3	9	8.3	8.1	7.6	8.4	8.8	19	8.6	8.7	8.9	9	9.4	9.4	9.7	9.5	9.9	9.8	9.6	9.2
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	-	8.01	7.83	7.73	7.68	7.58	7.57	7.85	7.77	7.73	7.74	7.73	7.68
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	-	8.41	8.08	7.98	7.93	7.83	7.82	8.17	8.09	8.05	8.06	8.05	8
Sodium	mg/L	0.1	200		7.1	6	6.8	7.6	8.1	9.9	8.8	8.2	8.9	151	10.2	10	11	17	15	12	9.6	8.3	12.1	15.7	11.6	9.3
Sulfate	mg/L	2	500		2	2	< 2	< 2	2	2	2	4	3.5	6	<2	ND	ND	<2	<2	<2	<2	<2	<2	<2	<2	
TDS (Calculated)	mg/L	1	500		60	-	58	91	102	117	148	128	131.53	1110	128	137	158	175	195	193	173	176	199	207	193	202
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	0.6	0.9	1.1	1.5	<5	2.9	2.6	0.8	7.9	4.6	3.6	
Turbidity	NTU	0.1	0.1-1	0.1-1	1.5	505	41	17	5.2	3.8	0.2	398	12	322	3.2	2.2	1.3	3.8	1.1	16	1.3	15.8	4.9	41.5	8.6	70.1

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table A.9 - MW-23A Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			145	121	66	71	52	97	118	132	61	110	62	100	88	64	49	34	81	75	76	37
Ammonia (as NH ₃)	mg/L	0.03			< 0.05	0.06	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.1	0.06	< 0.05	ND	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.03	0.03	< 0.03	< 0.03
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	3.29	4.13	3.31	3.85	4.04	4.49	5.19	6.52	7.40	3.04	3.61
Bicarbonate (as CaCO ₃)	mg/L	5			145	121	65.9	70.9	51.9	97	118	131.8	61	110	62	99	88	64	49	34	81	75	76	37
Calcium	mg/L	0.1			51.9	47.8	25.4	31.1	32.9	43.4	5.8	70.2	22.6	39.7	42	43	40	36	36.4	28.8	55.4	60.2	32.4	31.7
Carbonate (as CaCO ₃)	mg/L	10			0.14	0.1	< 1	0.1	0.1	< 1	< 1	0.2	< 1	< 1	ND	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	3.32	4.11	3.93	4.66	3.69	3.52	4.91	6.76	6.90	3.77	4.13
Chloride	mg/L	1	250		23.6	46.7	37.2	44.5	65	45.8	35.4	88	48	31	95	39	68	91	118	155	160	201	45	93
Color	TCU	5	15		4	19	10	7	9	< 5	< 5	33	9	< 5	ND	< 5	< 5	5	< 5	< 5	< 5	< 5	< 5	6
Conductance (RCap)	uS/cm	1			371	457	256	293	362	380	393	543	300	343	440	330	420	440	507	558	670	777	385	376
Dissolved Organic Carbon	mg/L	0.5			2.9	< 0.5	< 0.5	< 0.5	355	< 0.5	0.6	2.7	-	< 50	-	-	-	-	1.5	1.5	0.8	7.6	< 0.5	< 0.5
Hardness (as CaCO ₃)	mg/L	-			141	140	72.5	90.4	96.1	129	156	210.87	66.7	118	130	130	130	110	110	90	197	199	104	89.9
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	0.53	0.267	8.56	9.52	4.53	12	2.8	1.8	3.5	10.7	6.7
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-0.61	-1.13	-0.485	-0.574	-1.12	-1.67	-1.54	-0.59	-0.74	-0.71	-1.86
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-1.01	-1.38	-0.735	-0.823	-1.37	-1.99	-1.86	-0.91	-1.06	-1.03	-2.18
Magnesium	mg/L	0.1			2.8	4.9	2.2	3.1	3.4	5	5.9	8.64	2.5	4.6	6.2	6	6.0	4.5	4.7	4.4	14.3	11.7	5.5	2.6
Nitrate (as NO ₃ -)	mg/L	0.05	10		-	-	-	-	-	-	-	-	-	0.07	0.06	-	0.06	0.11	0.17	0.12	0.14	< 0.05	< 0.05	< 0.05
Nitrate + Nitrite	mg/L	0.05			< 0.05	0.06	< 0.05	0.06	< 0.05	0.05	0.06	0.18	< 0.05	0.07	0.06	0.06	0.06	0.11	0.17	0.12	0.14	< 0.05	< 0.05	< 0.05
Nitrite	mg/L	0.05	1	-	-	-	-	-	-	-	-	-	-	< 0.01	ND	-	< 0.01	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Orthophosphate	mg/L	0.01			< 0.01	< 0.01	0.03	0.02	0.03	0.04	0.03	< 0.3	0.02	0.03	0.04	0.04	0.03	0.04	0.04	0.03	0.03	0.03	0.04	
pH	Units	-	6.5-8.5		7	7.1	7.3	7.1	7.4	7.3	7.2	7.2	7	7.2	6.85	7.27	7.28	6.92	6.7	7.1	7.4	7.3	7.51	6.69
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	< 0.1	ND	-	< 0.1	< 0.1	< 0.1	< 0.1	0.02	0.03	0.04	< 0.02
Potassium	mg/L	0.1			1.5	1.9	1.1	1.3	1.6	1.7	1.6	2.9	1.5	1.6	2	2	9.8	1.9	1.6	1.8	2.0	2.4	1.9	1.1
Reactive Silica (as SiO ₂)	mg/L	0.5			15	10.4	13	8.7	10.7	11.2	1.5	13.2	13	11	12	10	12	13	12.1	11.9	10.9	9.0	12	10.2
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	7.81	7.98	7.76	7.85	8.04	8.37	8.64	7.99	7.99	8.22	8.55
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	8.21	8.23	8.01	8.10	8.29	8.69	8.96	8.31	8.31	8.54	8.87
Sodium	mg/L	0.1	200		12.9	28.9	23.2	22.4	26.6	22.1	13.9	36.8	33.3	21.1	33	28	44	34	28.4	69.5	61.9	64.1	37.1	52.1
Sulfate	mg/L	2	500		10	13	6	9	8	10	14	13.7	6	10	11	11	9	9	8	6	18	11	12	12
TDS (Calculated)	mg/L	1	500		205	227	148	163	180	198	207	312.82	164	185	240	201	243	229	228	288	363	398	181	216
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	ND	< 5	1.7	< 5	2.4	1.1	1.1	7.6	3.7	< 0.5	
Turbidity	NTU	0.1	0.1-1	0.1-1	47.9	13.1	6	3.7	2.2	11.3	>1000	720	568	514	490	670	290	240.00	322	462	106	1620	1940	2430

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table A.10 - MW-23B Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	
Alkalinity (as CaCO ₃)	mg/L	5			152	99	114	102	89	92	93	167	84	93	120	91	88	88	73	71	65	74	76	62	
Ammonia (as NH ₃)	mg/L	0.03			0.7	< 0.05	1.07	1	0.53	0.96	0.78	0.4	0.67	0.74	0.68	0.79	0.81	0.71	0.61	0.79	<0.03	0.72	0.75	0.49	
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	3.13	3.78	3.35	3.20	3.61	3.47	3.64	3.55	3.50	2.95	3.31	
Bicarbonate (as CaCO ₃)	mg/L	5			152	98.2	114	102	88.8	92	93	166.59	84	93	117	91	88	88	73	71	65	74	76	62	
Calcium	mg/L	0.1			50.3	37	38.9	37	32.4	39.1	34.8	68.1	33.2	33	48	41	32	34	32.4	38.9	56.1	33.9	32.9	35.8	
Carbonate (as CaCO ₃)	mg/L	10			0.09	0.7	< 1	0.1	0.2	< 1	< 1	0.39	< 1	< 1	ND	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	2.92	3.98	4.23	3.36	3.50	3.27	4	4.40	3.96	3.65	3.9	
Chloride	mg/L	1	250		34.2	25.5	28.6	32.4	31.1	33.9	34.8	28.4	37	36	41	44	41	55	60	68	67	62	41	63	
Color	TCU	5	15		< 1	9	< 5	< 5	< 5	< 5	< 5	37	< 5	< 5	ND	< 5	9	18	< 5	< 5	< 5	< 5	9	< 5	
Conductance (RCap)	uS/cm	1			435	296	336	334	336	345	327	409	313	320	380	340	340	370	389	380	365	401	361	343	
Dissolved Organic Carbon	mg/L	0.5			0.7	, 0.5	0.6	< 0.5	317	< 0.5	1.1	2.3	-	< 5	-	-	-	1.7	1.9	365	1.3	1.1	< 0.5		
Hardness (as CaCO ₃)	mg/L	-			158	114	123	118	102	122	111	196.73	103	101	150	130	99	110	97.8	90	163	105	103	103	
Ion Balance	%	-			-	-	-	-	-	-	-	3.54	2.59	11.6	2.44	1.55	2.9	2.8	10.6	6.0	10.6	8.1			
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-0.97	-0.581	-0.877	-0.953	-1.15	-0.84	-1.54	-0.76	-1.06	-0.81	-1.47	
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-1.37	-0.831	-1.13	-1.20	-1.4	-1.16	-1.86	-1.08	-1.38	-1.13	-1.79	
Magnesium	mg/L	0.1			7.4	5.3	6.3	6.2	5.1	5.8	5.8	6.48	4.9	4.6	6	6	4.9	4.9	4.1	4	5.5	4.9	5	3.4	
Nitrate (as NO ₃ -)	mg/L	0.05		10	-	-	-	-	-	-	-	-	-	< 0.05	ND	-	< 0.18	0.06	0.33	0.09	0.67	< 0.05	< 0.05	< 0.05	
Nitrate + Nitrite	mg/L	0.05			< 0.05	1.37	0.15	0.05	0.57	0.07	0.26	0.23	0.22	0.08	ND	< 0.05	< 0.18	0.06	0.33	0.09	0.67	0.07	< 0.05	0.08	
Nitrite	mg/L	0.05		1	-	-	-	-	-	-	-	-	-	0.06	0.02	-	< 0.01	< 0.01	< 0.05	< 0.05	< 0.05	0.07	< 0.05	0.08	
Orthophosphate	mg/L	0.01			< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.3	< 0.01	< 0.01	ND	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
pH	Units	-	6.5-8.5		6.8	7.9	7.4	7	7.4	7.2	7.6	7.4	7.6	7	7.06	6.95	6.99	6.76	7.4	7.5	7.3	7.2	7.4	6.8	
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	< 0.1	ND	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.02	0.05	0.05	< 0.02	
Potassium	mg/L	0.1			2.5	3.1	3.6	3.4	3.1	3.6	3.5	3	3.3	3	3.1	3.6	3.6	3.3	2.4	2.6	2.4	3.3	3.4	2.3	
Reactive Silica (as SiO ₂)	mg/L	0.5			11	11.5	11.4	11.4	10.6	10.2	10.8	13.3	11	11	11	11	12	12	11.8	11.5	11.7	11.5	11.5	11.6	
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	-	7.97	7.64	7.83	7.94	7.91	8.24	8.64	8.06	8.22	8.21	8.27
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	-	8.37	7.89	8.08	8.19	8.16	8.56	8.96	8.38	8.54	8.53	8.59
Sodium	mg/L	0.1	200		17.1	14.2	15	14.3	17	15.8	16	16.6	17.1	17.5	22	31	24	25	20.8	28.2	21.5	33.1	27.7	32.3	
Sulfate	mg/L	2	500		10	11	13	15	14	14	14	11.6	10	12	14	15	14	14	14	15	13	13	13	14	
TDS (Calculated)	mg/L	1	500		225	175	187	182	170	179	178	247.91	169	174	220	215	192	210	188	288	213	204	176	198	
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	1	8	1.9	0.8	3.2	1.8	0.8	1.3	0.8	< 0.5	
Turbidity	NTU	0.1	0.1-1	0.1-1	33	4	3.1	2.1	4.3	0.3	<1000	920	203	220	98	810	110	100	365	355	165	431	78.4	230	

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table A.11 - MW-23C Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	25-Aug-04 DUP	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			58	68	64	58	53	61	56	63	58	66	57	57	62	59	59.0	54	56	63	60	52	49
Ammonia (as NH ₃)	mg/L	0.03			< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.1	< 0.05	<0.05	<0.05	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	1.46	1.28	1.27	1.42	1.30	1.28	1.21	9.01	1.46	1.40	1.21	1.08
Bicarbonate (as CaCO ₃)	mg/L	5			56.2	67.1	83.6	57.4	52.6	60	55	62.2	57	65	56	56	61	58	58	54	55	63	60	52	49
Calcium	mg/L	0.1			7.7	1.2	8.4	9.9	10.4	11.4	13.7	18.5	11	9.9	9.3	11	17	8.3	10	7.3	13.6	13.2	10.4	11.6	8.8
Carbonate (as CaCO ₃)	mg/L	10			1.67	0.8	< 1	0.5	0.4	< 1	<1	0.74	< 1	<1	<1	ND	<1	1	1	<10	<10	<10	<10	<10	<10
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	1.31	1.32	1.39	1.85	2.10	1.35	1.1	1.35	1.41	1.52	1.36	1.25
Chloride	mg/L	1	250		4	3.9	3.9	4.7	4.2	4.3	4.9	4	3	3	3	4	4	4	3.00	4	5	5	4	4	3
Color	TCU	5	15		< 3	50	34	82	7	11	11	490	21	7	8	ND	<5	10	19	6	<5	5	19	<5	5
Conductance (RCap)	uS/cm	1			121	155	127	127	130	132	130	136	128	128	120	120	140	130	130	129	122	134	128	129	123
Dissolved Organic Carbon	mg/L	0.5			1.5	< 0.5	< 0.5	< 0.5	133	< 0.5	<0.5	0.9	-	<5	<5	-	-	-	<0.5	<0.5	<0.5	<0.5	3.2	<0.5	<0.5
Hardness (as CaCO ₃)	mg/L	-			23	63	25.5	30.1	30.9	35.9	41.6	55.17	32	29.2	27.7	33	50	26	31	21.9	39.3	39.1	30.9	33.5	25.7
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	5.49	1.49	4.63	13.2	23.5	2.66	4.9	2.3	1.9	4.0	6.1	7.2
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-0.52	-0.51	-0.256	-0.471	-0.272	-0.262	-0.77	-0.29	-0.66	-0.62	-0.65	-1.05
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-0.92	-0.91	-0.507	-0.722	-0.523	-0.514	-1.09	-0.61	-0.98	-0.94	-0.97	-1.37
Magnesium	mg/L	0.1			1	2.4	1.1	1.3	1.2	1.8	1.8	2.18	1.1	1.1	1.1	1.2	1.8	1.3	1.1	0.9	1.3	1.5	1.2	1.1	0.9
Nitrate (as NO ₃ -)	mg/L	0.05		10	-	-	-	-	-	-	-	-	-	0.23	0.24	0.32	-	0.18	0.24	0.27	0.36	0.27	0.52	0.18	0.22
Nitrate + Nitrite	mg/L	0.05			< 0.05	0.44	0.21	0.25	0.22	0.29	0.33	0.53	0.24	0.23	0.24	0.32	0.57	0.18	0.24	0.27	0.36	0.27	0.64	0.18	0.22
Nitrite	mg/L	0.05		1	-	-	-	-	-	-	-	-	-	<0.01	<0.01	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	0.12	<0.05	<0.05
Orthophosphate	mg/L	0.01			< 0.01	0.05	0.02	0.03	0.03	0.06	0.04	<0.3	0.03	0.02	0.02	0.02	0.04	0.02	0.02	0.03	0.02	0.02	0.03	0.02	0.02
pH	Units	-	6.5-8.5		8.5	8.1	7.8	8	7.9	8.1	8.1	8.1	8	8.1	8.2	8.27	7.85	8.39	8.29	8.2	8.4	8.0	8.2	8.14	7.88
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	<0.1	<0.1	ND	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	0.03	<0.02
Potassium	mg/L	0.1			1.7	3.8	3.3	3.7	3.1	4.5	3.6	3.4	2.7	2.9	3	2.9	2.8	11	3.0	2.7	2.7	2.7	3.1	3.1	2
Reactive Silica (as SiO ₂)	mg/L	0.5			8.6	10.5	9.1	8.7	8.6	8.9	10	11.6	9.6	9.3	9.2	9.5	10	9.0	9.2	9.2	10.2	9.8	9.3	9.5	8.1
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	8.62	8.71	8.53	8.32	8.66	8.55	8.97	8.69	8.66	8.78	8.79	8.93
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	9.02	9.11	8.78	8.57	8.91	8.8	9.29	9.01	8.98	9.10	9.11	9.25
Sodium	mg/L	0.1	200		18.1	10.2	17.2	16	18.8	13	10.1	8.7	13.8	14.9	15.8	15	18	30	15	13.6	11.3	12.8	18.8	14.1	15.7
Sulfate	mg/L	2	500		2	4	< 2	2	2	6	<2	2.5	4	<2	<2	ND	2	<2	<2	<2	<2	2	2	<2	
TDS (Calculated)	mg/L	1	500		78	99	84	82	79	88	81	89.21	81	84	79	79	95	100	78	62	69	76	78	68	61
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	ND	1.1	<0.5	<5	<0.5	0.6	0.8	<5.0	2.7	<0.5	
Turbidity	NTU	0.1	0.1-1	0.1-1	1.9	24.1	20	60.6	5.8	24.3	>1000	>1000	226	71.4	70.8	80	22	78	370	16.5	1580	45.7	3150	887	929

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 **Bold** indicates exceedance in aesthetic objective.

Starting in 2010 **Grey** indicates exceedance in maximum allowable concentration.

Table A.12 - MW-24A Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	28-Jul-10	28-Jul-10	5-Jul-13	19-Aug-14	22-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			191	179	339	62	50	167	113	203	170	190	89	310	95	67	70	404	94	45	43	41
Ammonia (as NH ₃)	mg/L	0.03			0.77	9.7	2.88	9.4	2.14	6	3.49	<0.1	0.05	8.4	3.8	17	8.4	2.2	0.37	28.5	1.8	2.18	<0.03	<0.03
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	9.85	6.98	10.2	7.29	7.39	6.37	9.86	5.73	7.16	4.73	2.72
Bicarbonate (as CaCO ₃)	mg/L	5			191	179	339	62	49.9	167	113	202.88	170	190	88.6	312	94	67	70	404	94	45	43	41
Calcium	mg/L	0.1			70	55	89	27.2	23.3	42.2	59.6	80.5	37.1	62.6	48	75	26	24	25	71.9	25.3	16.7	20	2
Carbonate (as CaCO ₃)	mg/L	10			0.11	0.1	< 1	0	0.1	< 1	<1	0.12	< 1	<1	ND	ND	1	<1	<10	<10	<10	<10	<10	<10
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	9.52	7.31	10.4	8	8.05	5.93	11.2	5.99	6.94	6.72	2.98
Chloride	mg/L	1	250		165	186	160	178	207	159	235	144	97	170	160	81	150	200	170	63	117	199	129	59
Color	TCU	5	15		< 3	13	6	< 5	7	6	7	51	10	13	ND	ND	<5	<5	<5	5	<5	<5	<5	<5
Conductance (RCAp)	uS/cm	1			1070	1120	1160	856	926	1170	1270	948	735	1100	760	980	820	860	700	1030	601	801	798	293
Dissolved Organic Carbon	mg/L	0.5			18.7	0.5	6.8	0.8	884	4.9	3.3	-	-	<50	-	-	-	-	-	12	0.6	5.3	1.9	0.8
Hardness (as CaCO ₃)	mg/L	-			243	200	320	105	83.7	154	227	294.9	139	225	180	280	92	95	93	244	86.2	63.1	75.1	7.9
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	1.73	2.3	0.73	4.64	4.27	3.58	6.3	2.2	1.5	17.4	4.5
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-0.82	-1.78	-0.376	0.036	-1.97	-2.2	-0.3	-1.36	-2.17	-1.74	-3.19
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-1.22	-2.03	-0.624	-0.212	-2.21	-2.45	-0.62	-1.68	-2.49	-2.06	-3.51
Magnesium	mg/L	0.1			16.6	15.2	23.8	8.9	6.2	11.7	19.1	22.8	11.2	16.8	15	22	6.8	8.8	7.6	15.6	5.6	5.2	6.1	0.7
Nitrate (as NO ₃ -)	mg/L	0.05		10	-	-	-	-	-	-	-	-	-	14.6	9.2	23	-	3.7	2.1	0.08	5.42	7.28	0.92	1.02
Nitrate + Nitrite	mg/L	0.05			15.2	3.8	1.48	10.4	4.01	20.02	20.66	11.7	2.2	15	9.2	23	15	3.7	2.1	0.08	5.42	7.28	0.92	1.02
Nitrite	mg/L	0.05		1	-	-	-	-	-	-	-	-	-	0.41	0.03	0.02	-	0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05
Orthophosphate	mg/L	0.01			< 0.01	0.01	0.01	< 0.01	< 0.01	0.03	0.02	<0.3	0.01	0.02	0.02	0.03	0.03	0.02	0.02	0.01	0.01	0.02	0.03	0.02
pH	Units	-	6.5-8.5		5.8	6.8	6.7	6.7	7.1	6.5	6	6.8	7.2	6.6	6.01	6.74	8.12	6.30	6	6.9	6.9	6.6	6.96	6.51
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	0.2	<0.1	0.05	0.02	<0.02
Potassium	mg/L	0.1			3.6	18	12.2	15.4	13	27.4	31	38.2	16.9	24.6	22	35	22	30	20	23.1	16.3	15.3	16.7	3.5
Reactive Silica (as SiO ₂)	mg/L	0.5			9.1	10.3	9.9	8.6	8.4	14.2	16.6	14.8	11	13	21	11	16	20	18	18.9	9.6	16.9	14.3	9.4
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	7.42	7.79	7.12	8.08	8.27	8.20	7.2	8.26	8.77	8.7	9.7
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	7.82	8.04	7.36	8.33	8.51	8.45	7.52	8.58	9.09	9.02	10
Sodium	mg/L	0.1	200		110	90	112	85	114	122	120	67.5	81.9	86.9	66	61	110	120	81	50.2	84.6	117	110	62.8
Sulfate	mg/L	2	500		7	6	8	6	10	16	16	20	13	9	7.2	3	8	8	7	<2	8	6	8	8
TDS (Calculated)	mg/L	1	500		564	517	630	424	432	589	661	521.3	380	574	438	598	476	471	378	545	341	422	320	165
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	ND	4.6	3.1	1.9	3.6	15.6	0.7	8.5	1.9	3.7
Turbidity	NTU	0.1	0.1-1	0.1-1	0.5	5	1.8	2.7	4.3	5	66.5	48	31.8	55	120	27	4.8	14	14	308	27.6	4.5	195	542

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table A.13 - MW-24B Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			938	1150	1410	1350	1290	1260	1660	1170	1700	1100	1300	950	1000	900	900	990	882	854	732	942	806	758
Ammonia (as NH ₃)	mg/L	0.03			64.5	77	78.5	82.5	89	76	121	100	<0.1	110	95	92	94	99	88	39	98.3	87.3	58.5	100.9	84.6	40.9
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	33.2	24	25.6	22.2	22.0	24.3	21.7	20.7	17.3	22.5	18.8	18
Bicarbonate (as CaCO ₃)	mg/L	5			938	1150	1410	1350	1290	1260	1660	1170	1698.4	1100	1300	952	1030	895	896	993	882	854	732	942	806	758
Calcium	mg/L	0.1			211	207	249	242	209	177	236	206	239	162	105	130	130	140	110	110	115	93.5	115.0	124	109	
Carbonate (as CaCO ₃)	mg/L	10			0.44	1	0.8	1	0.8	0.6	2	4	1.6	1	2	ND	ND	1	<1	<1	<10	<10	<10	<10	<10	<10
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	27.6	27.1	27.3	29	25.0	21.9	24.5	24.7	18.7	26.0	24.6	20.7
Chloride	mg/L	1	250		306	323	388	322	270	313	440	411	382	300	250	180	180	150	150	160.0	145	128	90	128	94	100
Color	TCU	5	15		20	23	4	29	48	46	39	49	>1000	45	29	40	33	29	25	35	18	23	13	29	112	18
Conductance (RCap)	uS/cm	1			3550	3340	4120	3760	3610	3780	5240	4980	3910	3560	3020	2600	2500	2400	2300	2300	2380	1940	1640	2280	2010	1790
Dissolved Organic Carbon	mg/L	0.5			35.7	45.5	57	43	43.5	3460	70	53.6	-	-	<100	-	-	-	-	-	50.2	37.5	<0.5	3.3	26.6	6
Hardness (as CaCO ₃)	mg/L	-			781	783	951	910	834	639	954	851	954.64	656	436	510	510	530	420	440	431	454	400	444	463	430
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	-	9.29	6.07	3.29	13.2	6.29	5.14	6	8.9	4.0	7.3	13.4	6.9
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-	0.78	0.253	0.375	0.638	0.450	0.307	0.29	0.5	0.25	0.49	0.42	0.02
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-	0.38	0.008	0.13	0.393	0.205	0.062	-0.03	0.18	-0.07	0.17	0.1	-0.3
Magnesium	mg/L	0.1			61.8	64.7	79.9	74.3	75.8	47.9	88.5	81.8	86.9	61	48.9	43	47	46	37	38	38	40.5	40.4	38.1	37.3	38.3
Nitrate (as NO ₃ -)	mg/L	0.05	10		-	-	-	-	-	-	-	-	-	-	<0.05	ND	ND	-	<0.05	<0.05	0.16	0.13	1.10	0.44	0.06	0.09
Nitrate + Nitrite	mg/L	0.05			< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.06	< 0.05	< 0.05	ND	ND	<0.05	<0.05	<0.05	0.16	0.13	1.10	0.44	0.06	0.09
Nitrite	mg/L	0.05	1		-	-	-	-	-	-	-	-	-	-	0.03	ND	ND	-	<0.01	<0.01	<0.05	<0.25	<0.05	<0.05	<0.05	
Orthophosphate	mg/L	0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.09	0.06	< 0.3	0.07	0.11	ND	ND	< 0.01	< 0.01	< 0.01	0.02	0.01	< 0.01	< 0.01	0.01	< 0.01
pH	Units	-	6.5-8.5		6.7	6.7	6.8	6.9	6.8	6.7	7	7.6	7	7.1	7.2	6.74	6.85	7.14	7.05	6.84	7	7.2	7.1	7.2	7.11	6.79
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	0.4	0.4	0.6	0.4	<0.02	0.31	0.03	0.17
Potassium	mg/L	0.1			5.3	72.3	93.5	109	108	106	135	137	132	123	98.4	110	110	99	100	110	90.4	90.5	77.7	84.2	106	92
Reactive Silica (as SiO ₂)	mg/L	0.5			15.7	16.2	16	17.6	15.5	15.2	15.2	14.8	19	18	17	17	17	17	17	18	17.9	15.7	19.1	16.6	15.5	14.7
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	-	6.42	6.49	6.48	6.5	6.60	6.53	6.71	6.7	6.85	6.66	6.69	6.77
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	-	6.82	6.73	6.72	6.75	6.85	6.78	7.03	7.02	7.17	6.98	7.01	7.09
Sodium	mg/L	0.1	200		214	175	246	252	230	216	376	350	344	253	207	170	170	170	150	150	118	130	102	140	132	122
Sulfate	mg/L	2	500		2	< 2	< 2	< 2	< 2	< 2	8	12	< 2.0	12	8	ND	ND	< 2	< 2	< 2	< 2	< 10	< 2	< 2	< 2	3
TDS (Calculated)	mg/L	1	500		1460	-	2020	1940	1800	1740	2450	2040	2224.96	1730	1640	1340	1390	1320	1240	1260	1200	1170	926	1250	1110	1020
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	-	31	28	39	27	37.00	69.9	37.5	<0.5	36	27.1	15.7
Turbidity	NTU	0.1	0.1-1	0.1-1	335	573	39	3	2.2	15.5	1	3.7	>1000	383	936	620	790	450	500	460	199	650	504	1040	14200	1400

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table A.14 - MW-25B Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	19-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Aug-01 Duplicate	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	16-Aug-07 Dup B	28-Jul-08	10-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	19-Aug-14	22-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			76	144	45	50	92	47	42	42	41	44	230	180	100	340	280	64	120	220	393	62	333	204	353	292
Ammonia (as NH ₃)	mg/L	0.03			< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	0.09	0.22	0.06	ND	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.03	0.03	0.04	0.5
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	5.03	2.9	10	8.45	1.37	3.55	6.35	11.7	1.95	9.49	6.28	9.57	8.63	
Bicarbonate (as CaCO ₃)	mg/L	5			75.4	143	44.5	49.8	91.4	46	42	42	41	43.63	229	180	102	344	274	63	120	215	393	62	333	204	353	292
Calcium	mg/L	0.1			23.3	55.1	14.4	13.2	33.7	15.3	17	13	12.9	13.5	107	65.5	45	160	150	1.6	61	100	144	25	109	92.3	153	152
Carbonate (as CaCO ₃)	mg/L	10			0.56	1	0.4	< 1	0.5	0.9	< 1	< 1	< 1	0.33	1	< 1	ND	ND	2	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	4.6	3.14	10.6	10	1.55	5.20	7.03	9.62	1.81	7.93	6.62	10.8	10.8	
Chloride	mg/L	1	250		11.5	32.1	5.2	5.4	21	10.4	9.1	10.4	9.9	9.7	74	49	30	110	100	3	41	72	135	25	100	78	89	99
Color	TCU	5	15		< 3	5	8	40	6	24	15	< 5	< 5	176	6	5	ND	6	6	< 5	9	6	8	< 5	< 5	< 5	< 5	5
Conductance (RCAp)	uS/cm	1			190	370	111	108	249	124	121	116	115	124	780	495	280	960	920	130	370	640	1190	197	889	614	1040	839
Dissolved Organic Carbon	mg/L	0.5			2.4	1.8	< 0.5	< 0.5	0.3	132	1.2	< 0.5	0.6	0.6	-	< 5	-	-	-	-	-	-	11.6	1.8	< 0.5	< 0.5	4.4	3.3
Hardness (as CaCO ₃)	mg/L	-			71	166	44	40.8	105	47.3	52.3	40.7	40.4	41.33	321	199	130	470	440	5	190	300	421	74.8	337	279	460	466
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	-	4.42	3.89	2.72	8.6	6.16	18.9	5.08	9.7	3.9	8.9	2.6	6.2	11.2	
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-	0.01	-0.589	0.448	1.08	-1.36	-0.0140	0.267	0.59	-0.4	0.61	0.11	0.68	0.22	
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-	-0.39	-0.84	0.2	0.836	-1.61	-0.264	0.018	0.27	-0.72	0.29	-0.21	0.36	-0.1	
Magnesium	mg/L	0.1			3.2	6.8	2	1.9	5.1	2.2	2.4	2	2	1.85	13.1	8.7	5.5	18	18	0.2	8.1	13	15	3	15.7	11.8	18.9	20.9
Nitrate (as NO ₃ -)	mg/L	0.05			10	-	-	-	-	-	-	-	-	-	< 0.05	ND	ND	-	-	< 0.05	< 0.05	0.09	0.11	0.06	<.05	< 0.05		
Nitrate + Nitrite	mg/L	0.05			< 0.05	< 0.05	0.08	0.06	< 0.05	< 0.05	0.06	< 0.05	< 0.05	0.52	< 0.05	< 0.05	ND	ND	< 0.05	0.1	< 0.05	< 0.05	0.09	0.11	0.06	<.05	< 0.05	
Nitrite	mg/L	0.05	1		-	-	-	-	-	-	-	-	-	-	< 0.01	ND	ND	-	-	< 0.01	< 0.01	< 0.05	< 0.05	<.05	< 0.05			
Orthophosphate	mg/L	0.01			< 0.01	< 0.01	0.01	0.01	< 0.01	< 0.01	0.04	< 0.01	< 0.01	< 0.3	0.01	< 0.01	0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		
pH	Units	-	6.5-8.5		7.9	7.7	8	7.5	7.8	8.3	7.8	7.9	7.9	7.9	7.8	7.4	7.11	7.19	7.94	7.97	7.52	7.37	7.5	8	7.7	7.47	7.61	7.23
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	-	< 0.1	ND	ND	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.02	0.02	0.04	< 0.02	
Potassium	mg/L	0.1			5.3	6	3.5	3.6	4.8	3.4	3.9	3.6	3.6	3.8	6.4	5.8	4.7	7	7.7	1.8	14	7.6	5.2	4	4.6	7.0	8.6	5.1
Reactive Silica (as SiO ₂)	mg/L	0.5			9	11	7.8	8.1	9	7.8	7.2	7.8	7.7	7.6	13	11	9.2	15	14	11	9.5	12	15.9	8.4	14.3	11.7	15.1	11.8
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	-	7.39	7.7	6.74	6.86	9.33	7.53	7.1	6.91	8.4	7.09	7.36	6.93	7.01	
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	-	7.79	7.95	6.99	7.1	9.58	7.78	7.35	7.23	8.72	7.41	7.68	7.25	7.33	
Sodium	mg/L	0.1	200		9.3	6.1	4.6	3.9	5.6	4.6	3.8	3.6	3.5	3.8	15.5	10.4	7.5	24	24	32	26	18	24	4.8	24.5	19.6	28.8	30.2
Sulfate	mg/L	2	500		4	< 2	2	< 2	< 2	< 2	5	< 2	4	< 2.0	< 2	< 2	ND	ND	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	
TDS (Calculated)	mg/L	1	500		111		67	69	137	74	74	68	68	69.17	369	261	164	541	480	89	232	352	560	100	454	331	515	484
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	ND	6	14	4	1.9	< 5	12.6	1.2	< 0.5	2.8	4.4	3.8		
Turbidity	NTU	0.1	0.1-1	0.1-1	0.8	798	8.3	22	4	30.4	4	835	339	95	99.2	95.4	220	330	210	190	290	160	55	111	<			

Table A.15 - MW-27B Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	19-Aug-14	21-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			117	77	77	96	45	86	73	75	79	83	73	63	64	84	69	66	59
Ammonia (as NH ₃)	mg/L	0.03			< 0.05	< 0.05	<0.05	<0.1	0.08	<0.05	ND	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03
Anion Sum	me/L	-			-	-	-	-	2.01	1.67	1.68	1.67	1.82	1.56	1.41	1.41	1.83	1.57	1.41	1.28	
Bicarbonate (as CaCO ₃)	mg/L	5			109	76	75	91.44	44	85	71.6	73	76	80	71	63	60	84	69	66	59
Calcium	mg/L	0.1			5	11.1	24	3.5	5.5	5.6	4.2	4.8	4.7	3.6	5.6	5.4	4.1	5.0	5.6	5.7	3.8
Carbonate (as CaCO ₃)	mg/L	10			8.1	< 1	1	4.31	< 1	1	ND	1	2	3	2	<10	<10	<10	<10	<10	<10
Cation Sum	me/L	-			-	-	-	-	1.83	1.66	1.81	1.8	1.91	1.76	1.38	1.51	1.88	0.51	1.83	1.22	
Chloride	mg/L	1	250		7.3	4.2	4.2	4.2	5	3	3.7	4	3	3	3.00	4	4	5	6	3	3
Color	TCU	5	15		12	5	6	48	11	20	7.2	ND	<5	33	11	<5	<5	<5	<5	<5	9
Conductance (RCAp)	uS/cm	1			327	209	193	185	190	182	150	170	160	180	160	145	131	173	154	152	146
Dissolved Organic Carbon	mg/L	0.5			-	< 0.5	<0.5	1.1	-	<50	-	-	-	-	<0.5	0.7	<0.5	<0.5	2.5	<0.5	
Hardness (as CaCO ₃)	mg/L	-			14.5	33.5	78.9	11.21	17	17.3	13	15	15	11	17	15.5	12.3	15.4	17.7	17.1	11.5
Ion Balance	%	-			-	-	-	-	4.49	0.36	3.63	3.75	2.41	6.02	0.9	3.5	1.3	50.9	12.9	2.6	
Langelier Index (@ 20C)	-	-			-	-	-	-	-0.56	-0.724	-0.495	-0.353	-0.276	-0.347	-1.14	-0.56	-0.86	-0.84	-0.79	-1.35	
Langelier Index (@ 4C)	-	-			-	-	-	-	-0.96	-0.975	-0.746	-0.604	-0.527	-0.598	-1.46	-0.88	-1.18	-1.16	-1.11	-1.67	
Magnesium	mg/L	0.1			0.5	1.4	4.6	0.6	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0.7	0.9	0.7	0.5	
Nitrate (as NO ₃ -)	mg/L	0.05		10	-	-	-	-	-	-	0.27	-	nt		0.46	0.27	0.11	0.23	0.14	0.2	
Nitrate + Nitrite	mg/L	0.05			< 0.05	0.24	0.34	<0.06	0.42	0.5	0.34	0.27	0.13	0.06	0.11	0.46	0.27	0.11	0.23	0.14	0.2
Nitrite	mg/L	0.05		1	-	-	-	-	-	-	ND	-	nt		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Orthophosphate	mg/L	0.01			< 0.01	0.02	<0.01	<0.3	0.14	0.05	0.02	0.01	0.01	<0.01	0.02	0.01	<0.01	0.01	<0.01	0.02	
pH	Units	-	6.5-8.5		8.9	8.1	8.3	8.7	8.3	8.2	8.14	8.3	8.43	8.61	8.39	7.9	8.6	8.1	8.1	8.22	7.87
Phosphorus	mg/L	0.02			-	-	-	-	-	-	ND	-	-	-	<0.1	<0.1	<0.02	<0.02	<0.02	<0.02	
Potassium	mg/L	0.1			3.8	4.8	6.8	3	4.9	4.5	4	4.8	4.6	5.2	4.3	3.1	3.3	3.8	0.9	4.5	2.8
Reactive Silica (as SiO ₂)	mg/L	0.5			10.1	7.1	8.6	6.2	9.4	8.7	9.5	9.5	8.8	6.9	8.1	7	8.4	8.1	7.9	8.5	9
Saturation pH @ 20C	Units	-			-	-	-	-	-	8.76	8.86	8.8	8.78	8.89	8.74	9.04	9.16	8.96	8.98	9.01	9.22
Saturation pH @ 4C	Units	-			-	-	-	-	-	9.16	9.12	9.05	9.03	9.14	8.99	9.36	9.48	9.28	9.30	9.33	9.54
Sodium	mg/L	0.1	200		69.3	32.4	31.3	41.2	32.8	31.5	29	32	32	35	30	22.7	27.2	33.8	3.0	31.5	20.9
Sulfate	mg/L	2	500		33	20	14	<2.0	41	8	4.5	3	<2	2	<2	<2	<2	<2	<2	<2	
TDS (Calculated)	mg/L	1	500		-	128	141	118.36	128	116	102	105	102	108	97	76	79	99	59	86	67
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	ND	ND	68	0.8	<5	1.6	0.8	<0.5	<0.5	3.3	<0.5
Turbidity	NTU	0.1	0.1-1	0.1-1	0.92	21.8	715	50	560	975	860	>1000	>1000	>1000	92	103	548	844	548	526	667

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table A.16 - MW-27C Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	20-Dec-94	9-Mar-95	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	19-Aug-14	21-Jul-15	
Alkalinity (as CaCO ₃)	mg/L	5			94	98	91	89	93	101	78	94	94	93	92	98	96	96	63	91	102	90	86	79	
Ammonia (as NH ₃)	mg/L	0.03			< 0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	ND	ND	<0.05	< 0.05	< 0.05	< 0.05	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	-	2.19	1.99	1.96	2.07	2.03	1.41	1.97	2.18	1.94	1.8	1.66
Bicarbonate (as CaCO ₃)	mg/L	5			89.5	96	89	87	91	99	76.08	92	92	92	89	96	93	94	63	87	102	90	85	79	
Calcium	mg/L	0.1			4	4	3.2	4.7	4	5.4	9.6	3.3	3.7	4.1	3.7	4	3.7	3.8	5.4	3.4	3.6	3.1	4.4	3.3	
Carbonate (as CaCO ₃)	mg/L	10			4.22	1	2	1.6	2	2	1.8	2	2	1	3	2	3	2	<10	<10	<10	<10	<10	<10	
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	2.19	2.06	2.07	2.31	2.28	2.29	1.38	2.26	2.52	1.66	2.4	1.83
Chloride	mg/L	1	250		4.2	4	4.4	4.5	4	4.5	3.8	5	7	4.1	4	4	4	4	5	5	5	5	3	3	
Color	TCU	5	15		6	39	43	20	12	<5	480	18	25	ND	ND	<5	8	5	<5	8	9	<5	<5	14	
Conductance (RCAp)	uS/cm	1			190	189	186	193	197	198	184	201	199	180	190	200	210	200	145	197	209	200	199	191	
Dissolved Organic Carbon	mg/L	0.5			0.5	< 0.5	0.5	190	< 0.5	< 0.5	1.4	-	<10	-	-	-	-	-	<0.5	0.6	2.3	<0.5	0.7	<0.5	
Hardness (as CaCO ₃)	mg/L	-			12	12	10	14	12.5	17.6	30.64	10.3	11.3	13	11	12	11	12	15.5	10.1	11.5	9.4	13.5	9.9	
Ion Balance	%	-			-	-	-	-	-	-	-	-	0.01	1.66	2.7	5.48	5.80	6.02	0.9	6.9	7.3	7.9	14.2	4.8	
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-0.5	-0.571	-0.303	-0.339	-0.325	-0.377	-1.14	-0.6	-0.83	-1.00	-0.7	-1.21	
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-0.9	-0.822	-0.554	-0.59	-0.575	-0.627	-1.46	-0.92	-1.15	-1.32	-1.02	-1.53	
Magnesium	mg/L	0.1			0.5	0.5	0.5	0.6	0.6	1	1.62	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.6	0.4	0.6	0.4	
Nitrate (as NO ₃ -)	mg/L	0.05		10	-	-	-	-	-	-	-	-	-	-	ND	-	nt	0.46	0.08	<0.05	<0.05	<0.05	<0.05		
Nitrate + Nitrite	mg/L	0.05			< 0.05	< 0.05	< 0.05	0.08	< 0.05	< 0.05	0.51	< 0.05	0.06	0.07	ND	<0.05	0.06	0.06	0.46	0.08	<0.05	<0.05	<0.05	<0.05	
Nitrite	mg/L	0.05		1	-	-	-	-	-	-	-	-	-	-	ND	-	nt	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Orthophosphate	mg/L	0.01			< 0.01	< 0.01	< 0.01	< 0.01	0.03	< 0.01	<0.3	0.02	0.01	0.02	ND	<0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	0.04	< 0.01	
pH	Units	-	6.5-8.5		8.7	8.2	8.3	8.3	8.4	8.4	8.4	8.3	8.4	8.2	8.53	8.43	8.49	8.43	7.9	8.5	8.2	8.1	8.31	7.96	
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	-	ND	-	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02		
Potassium	mg/L	0.1			3.4	2.6	2.9	3.1	3.4	3.6	4.3	3.5	3.5	3.4	3.4	3.3	3.6	3.7	3.1	2.8	3.1	3.2	3.9	3	
Reactive Silica (as SiO ₂)	mg/L	0.5			6.3	6.5	6.2	5.7	5.6	6.2	14.1	6.4	6	5.9	5.9	6	6.1	6.1	7	6.4	5.9	6.2	6.2	5.3	
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	8.9	8.77	8.83	8.77	8.82	8.81	9.04	9.1	9.03	9.14	9.01	9.17	
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	9.3	9.02	9.08	9.02	9.07	9.06	9.36	9.42	9.35	9.46	9.33	9.49	
Sodium	mg/L	0.1	200		40.6	41.4	38	36.4	38.8	41	31.8	42.4	42.9	39	40	46	45	45	22.7	45.6	50.9	31.9	46.7	35.8	
Sulfate	mg/L	2	500		2	2	2	< 2	4	4	14.1	7	5	ND	ND	<2	<2	<2	<2	<2	<2	<2	<2	<2	
TDS (Calculated)	mg/L	1	500		11	-	-	-	-	-	-	-	-	ND	ND	0.6	0.9	<5	1.6	1.3	3.2	<0.5	1.3	<0.5	
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	ND	ND	49	67	78	103	149	194	225	250	67.7	
Turbidity	NTU	0.1	0.1-1	0.1-1	2	166	359	4.6	3.9	64	94	204	45.4	37	0.6	49	67	78	103	149	194	225	250	67.7	

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table A.17 - MW-29B Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	20-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	
Alkalinity (as CaCO ₃)	mg/L	5			64	96	85	106	78	76	92	102	83	95	83	98	88	86	96	92	95	104	84	79	74	
Ammonia (as NH ₃)	mg/L	0.03			< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.1	< 0.05	<0.05	ND	ND	<0.05	<0.05	<0.05	0.09	<0.05	<0.03	<0.03	<0.03	<0.03	
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	2.31	2.04	2.35	2.3	2.22	2.47	2.42	2.31	2.51	2.17	1.95	1.86	
Bicarbonate (as CaCO ₃)	mg/L	5			63.5	94.8	84.2	105	77.5	75	91	101	82	94	83.1	97	88	85	95	92	95	104	84	79	74	
Calcium	mg/L	0.1			9.9	19.5	17.9	23.6	25.3	29.1	26.6	32.8	25.7	26.2	27	30	37	8.0	30	27.1	34	32.0	29.7	28.9	31.9	
Carbonate (as CaCO ₃)	mg/L	10			0.47	1.1	< 1	0.8	0.5	< 1	1	0.95	< 1	<1	ND	ND	<1	1	<1	<10	<10	<10	<10	<10	<10	
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	2.14	2.07	2.27	3.16	2.43	2.36	2.03	2.35	2.37	2.24	2.16	2.13	
Chloride	mg/L	1	250		8.4	4	6.6	11.8	15.9	14.6	16.6	11.2	8	11	10	11	16	14	15	17	12	12	14	10	11	
Color	TCU	5	15		7	15	9	180	< 5	< 5	<5	235	54	280	ND	ND	<5	<5	<5	<5	<5	<5	7	<5	19	
Conductance (RCap)	uS/cm	1			180	203	199	246	207	238	227	245	210	218	190	230	230	230	240	245	212	232	224	209	198	
Dissolved Organic Carbon	mg/L	0.5			6.3	0.5	1.4	0.3	215	< 0.5	0.7	1.8	-	<500	-	-	-	-	-	3.6	4.9	6.2	<0.5	0.7	<0.5	
Hardness (as CaCO ₃)	mg/L	-			29	58	53.8	70.5	75.5	89.1	80.8	99.81	76.5	78.6	79	87	110	87	90	80	97.3	95.1	89.0	87	90.8	
Ion Balance	%	-			-	-	-	-	-	-	-	-	3.83	0.876	1.74	15.8	4.52	2.28	8.7	0.9	2.9	1.5	5.1	6.9		
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-0.05	-0.56	-0.06	0.074	0.140	0.026	-0.2	0.11	-0.08	-0.36	-0.23	-0.47	
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-0.45	-0.811	-0.311	-0.177	-0.110	-0.23	-0.52	-0.21	-0.40	-0.68	-0.55	-0.79	
Magnesium	mg/L	0.1			1.1	2.2	2.2	2.8	3	4	3.5	4.35	3	3.2	3.1	3.3	4.5	3.7	3.5	3	3	3.7	3.6	3.6	2.7	
Nitrate (as NO ₃ -)	mg/L	0.05	10		-	-	-	-	-	-	-	-	-	0.19	0.17	0.17	-	0.09	0.2	0.26	0.15	0.12	0.19	0.12	0.07	
Nitrate + Nitrite	mg/L	0.05			< 0.05	0.45	0.39	0.42	0.06	0.12	0.08	0.42	0.12	0.21	0.17	0.17	0.1	0.09	0.2	0.26	0.15	0.12	0.19	0.12	0.07	
Nitrite	mg/L	0.05	1		-	-	-	-	-	-	-	-	-	0.02	ND	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Orthophosphate	mg/L	0.01			< 0.01	0.02	0.01	< 0.01	< 0.01	0.09	0.01	<0.3	0.04	<0.01	0.02	0.04	0.04	0.03	0.02	0.04	0.03	0.03	<0.01	0.03	0.02	
pH	Units	-	6.5-8.5		7.9	8.1	8	7.9	7.8	8	8.1	8	8	8	7.44	7.84	7.93	8.11	7.93	8	8.2	8.0	7.8	8	7.74	
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	<0.1	<0.1	<0.1	0.03	0.04	0.03	<0.02
Potassium	mg/L	0.1			2.7	3.2	3.2	3.9	2.9	4.4	3.6	4.5	3.6	3.5	3.2	3.8	4.3	5.8	3.7	2.8	2.9	2.9	3.6	3.8	2.5	
Reactive Silica (as SiO ₂)	mg/L	0.5			10.8	7.5	8.7	7.8	6.9	6.3	8.3	8	8.1	8.2	7.3	7.6	7.1	7.8	7.5	8	8.5	9.3	8.8	8.3	6.8	
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	8.05	8	7.9	7.86	7.97	7.9	8.2	8.09	8.08	8.20	8.23	8.21	
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	8.45	8.25	8.15	8.11	8.22	8.16	8.52	8.41	8.40	8.52	8.55	8.53	
Sodium	mg/L	0.1	200		27.2	29.6	22.9	27.3	10.7	12.1	12.7	16.2	12.2	10.9	9.4	9.7	19	13	11	7.8	7.7	9.0	8.4	7.5	5.8	
Sulfate	mg/L	2	500		14	5	9	6	3	16	5	4.5	12	4	3.3	3	3	5	5	4	3	4	4	4	3	
TDS (Calculated)	mg/L	1	500		112	131	123	149	116	133	132	143.17	123	125	114	128	145	130	136	119	120	127	115	106	102	
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	ND	ND	5	7 (1)	<0.5	9.5	6.9	<5.0	1.3	1	0.9	
Turbidity	NTU	0.1	0.1-1	0.1-1	2.8	26	48	93.2	16.2	13.5	>1000	>1000	>1000	>1000	860	200	150	>1000	570	3940	3580	4740	3730	4760	4470	

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 **Bold** indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table A.18 - MW-29C Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	20-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	
Alkalinity (as CaCO ₃)	mg/L	5			51	40	40	38	40	40	40	43	36	43	42	42	41	41	40	37	40	45	39	40	38	
Ammonia (as NH ₃)	mg/L	0.03			< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	ND	ND	<0.05	< 0.05	< 0.05	< 0.05	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	1.28	1.3	1.35	1.34	1.34	1.35	1.3	1.36	1.49	1.36	1.26	1.31	
Bicarbonate (as CaCO ₃)	mg/L	5			50.3	39.2	39.8	37.7	39.7	40	40	42.11	36	43	41.6	39	41	40	39	37	40	45	39	40	38	
Calcium	mg/L	0.1			8.4	12.6	10.8	10.9	9.2	16	11	11.3	11.4	6.4	9.5	7.1	14	8.0	8.6	9.8	9.3	6.9	10.4	7.8	6.5	
Carbonate (as CaCO ₃)	mg/L	10			0.6	0.7	< 1	0.2	0.3	< 1	<1	0.79	< 1	<1	ND	2	<1	<1	<10	<10	<10	<10	<10	<10	<10	
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	1.33	1.36	1.38	1.54	1.64	1.34	1.1	1.26	1.51	1.33	1.44	1.42	
Chloride	mg/L	1	250		5.1	5.4	7.9	9.3	10.4	10.8	11.9	10.6	12	12	13	15	15	15	16	16	17	17	13	15		
Color	TCU	5	15		10	7	44	85	10	31	<5	310	< 5	13	ND	ND	<5	22	17	<5	<5	<5	6	<5	17	
Conductance (RCAp)	uS/cm	1			117	107	112	117	115	125	126	125	133	133	130	140	140	140	142	145	147	145	150	141		
Dissolved Organic Carbon	mg/L	0.5			2.2	< 0.5	< 0.5	< 0.5	117	< 0.5	<0.5	0.9	-	<25	-	-	-	-	-	0.8	0.9	0.7	< 0.5	< 0.5		
Hardness (as CaCO ₃)	mg/L	-			26	38	33.1	33.4	28.3	46.9	33.6	34.68	34.6	19.3	29	22	43	25	26	29.8	28.2	22.2	31.7	23.2	19.9	
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	2.07	2.11	1.32	6.94	10.1	0.37	8.1	3.8	0.7	1.1	6.3	4.1	
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-1.09	-0.504	-0.183	-0.461	-0.473	-0.406	-0.91	-0.9	-1.09	-1.10	-0.79	-1	
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-1.49	-0.755	-0.434	-0.712	-0.724	-0.657	-1.23	-1.22	-1.41	-1.42	-1.11	-1.32	
Magnesium	mg/L	0.1			1.1	1.6	1.5	1.5	1.3	1.7	1.5	1.57	1.5	0.8	1.2	1	2	1.3	1.1	1.3	1.2	1.2	1.4	0.9	0.9	
Nitrate (as NO ₃ -)	mg/L	0.05	10		-	-	-	-	-	-	-	-	-	0.24	0.24	0.27	-	0.29	0.300	0.35	0.29	0.32	0.28	0.2	0.28	
Nitrate + Nitrite	mg/L	0.05			< 0.05	0.16	0.14	0.75	0.15	0.2	0.14	0.22	0.27	0.24	0.24	0.27	0.27	0.29	0.300	0.35	0.29	0.32	0.28	0.2	0.33	
Nitrite	mg/L	0.05	1	-	-	-	-	-	-	-	-	-	-	<0.01	ND	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05		
Orthophosphate	mg/L	0.01			< 0.01	0.02	< 0.01	0.02	< 0.01	0.06	< 0.01	< 0.3	< 0.01	0.02	0.02	0.01	0.01	0.02	0.01	0.02	< 0.01	< 0.01	0.01	0.01	< 0.01	
pH	Units	-	6.5-8.5		8.1	8.3	7.6	7.8	7.9	7.9	8	8.3	7.8	7.9	8.22	8.7	8.11	8.35	8.4	8.1	8.1	8.0	7.9	8.29	8.18	
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	<0.1	<0.02	0.02	<0.02	<0.02		
Potassium	mg/L	0.1			3.3	4.1	3.4	3.5	3.4	3.6	3.5	3.9	3.6	3.2	3.4	3.4	3.7	6.6	3.6	3	2.8	3.0	3.6	3.6	2.8	
Reactive Silica (as SiO ₂)	mg/L	0.5			8.4	7.3	7.4	6.7	6.4	6.6	7	7.5	6.9	6.9	6.9	6.9	6.9	6.9	6.9	7	7.1	7.1	7.1	7	6.6	
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	-	8.99	8.72	8.88	8.57	8.82	8.81	9.01	9	9.09	8.97	9.08	9.18
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	-	9.39	8.98	9.13	8.82	9.07	9.06	9.33	9.32	9.41	9.29	9.4	9.5
Sodium	mg/L	0.1	200		14.4	7.8	8.4	8	9.4	9.4	7.9	12.6	9.8	19.8	16	19	13	22	17	9.9	14.3	22.7	13.9	20.2	21.9	
Sulfate	mg/L	2	500		4	3	2	4	< 2	11	3	3.1	2	3	2.9	3	3	3	4	4	4	4	4	4	5	
TDS (Calculated)	mg/L	1	500		75	68	56	70	67	84	70	76.59	70	79	79.8	83	84	89	82	68	73	83	75	74	76	
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	ND	ND	6	<0.5	<0.5	1.3	0.9	<0.5	1	<0.5		
Turbidity	NTU	0.1	0.1-1	0.1-1	4.6	16.5	20	14.9	21.8	5.6	187	600	821	100	250	>1000	220	240	30	109	64.9	65.6	207	1010	873	

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table A.19 - MW-31A Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	21-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	18-Aug-05 MW-31A Dup	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	21-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			20	5	5	4	7	5	3	3.2	**	6	8	-	ND	6	7	9	7	9	<5	14	14	7
Ammonia (as NH ₃)	mg/L	0.03			< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	**	0.08	ND	-	ND	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	
Anion Sum	me/L	-			-	-	-	-	-	-	-		0.45	0.344	-	0.813	0.23	0.290	0.35	0.34	0.34	0.82	0.69	0.44	0.29	
Bicarbonate (as CaCO ₃)	mg/L	5			20	5	5	4	7	5	3	3.2	**	6	8	-	ND	6	7	9	7	9	<5	14	14	7
Calcium	mg/L	0.1			9.5	3.4	2.2	1.8	3.5	4.8	4.2	5.2	**	4.8	3.4	3.4	9.4	4.5	2.6	2.8	2.4	2.5	7.8	5.1	4	4.4
Carbonate (as CaCO ₃)	mg/L	10			0.01	0	< 1	0	0	< 1	<1	0	**	<1	ND	-	ND	<1	<1	<1	<10	<10	<10	<10	<10	
Cation Sum	me/L	-			-	-	-	-	-	-	-		0.48	0.383	-	0.932	0.79	1.11	0.340	0.31	0.31	0.84	0.47	0.38	0.42	
Chloride	mg/L	1	250		13.9	3.4	2.9	3.5	5.3	5.1	5.6	10.7	**	10	5	-	29	4	4	4	5	4	29	13	4	4
Color	TCU	5	15		< 3	< 3	7	31	< 5	43	<5	77	**	47	ND	-	ND	<5	<5	<5	<5	<5	<5	<5	<5	12
Conductance (RCAp)	uS/cm	1			93	34	27.6	24.4	38.3	43.7	41	65	**	53	39	-	110	34	33	40	39	39	104	57	42	39
Dissolved Organic Carbon	mg/L	0.5			0.7	< 0.5	0.5	< 0.5	40	3.2	1.2	-	-	<50	-	-	-	-	-	-	<0.5	0.8	<0.5	0.6	<0.5	1
Hardness (as CaCO ₃)	mg/L	-			28	11	7.6	6.1	11.2	16.5	13	17.8	**	14.9	10	-	32	16	10	9	8.9	9.1	28.1	16.0	12.9	13.9
Ion Balance	%	-			-	-	-	-	-	-	-	-	3.62	5.4	-	6.83	54.9	58.6	1.45	5.3	4	1.3	18.7	7.2	17	
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-3.46	-2.56	-	ND	-3.7	-3.58	-3.56	-3.89	-3.46	-3.67	-3.02	-2.88	-3.78	
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-3.86	-2.81	-	ND	-3.95	-3.83	-3.81	-4.21	-3.78	-3.99	-3.34	-3.2	-4.1	
Magnesium	mg/L	0.1			1.1	0.6	0.5	0.4	0.6	1.1	0.6	1.17	**	0.7	0.5	0.5	2	1.1	0.7	0.6	0.7	0.7	2.1	0.8	0.7	0.7
Nitrate (as NO ₃ -)	mg/L	0.05	10		-	-	-	-	-	-	-	-	0.05	ND	-	ND	-	<0.05	0.31	0.24	0.07	<0.05	<0.05	0.06	<0.05	
Nitrate + Nitrite	mg/L	0.05			< 0.05	0.37	< 0.05	< 0.05	0.05	< 0.05	<0.05	<0.06	**	0.08	ND	-	ND	<0.05	<0.05	0.31	0.24	0.07	<0.05	0.06	<0.05	
Nitrite	mg/L	0.05	1	-	-	-	-	-	-	-	-	-	0.03	ND	-	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Orthophosphate	mg/L	0.01			< 0.01	0.01	< 0.01	0.02	< 0.01	0.13	<0.01	<0.3	**	0.08	ND	-	ND	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
pH	Units	-	6.5-8.5		6.6	6.2	6.4	6.4	6.6	6.2	6.8	6.2	**	6.5	7.29	-	5.83	6.17	6.47	6.34	6.4	6.7	6.3	6.67	6.89	6.25
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	<0.1	ND	ND	ND	-	<0.1	<0.1	<0.1	<0.02	<0.02	0.03	<0.02	<0.02	
Potassium	mg/L	0.1			0.6	0.3	0.2	0.2	0.6	5	1.4	<0.6	**	0.4	0.7	0.6	0.3	0.5	8.4	0.3	<0.1	<0.1	0.1	0.7	0.2	0.4
Reactive Silica (as SiO ₂)	mg/L	0.5			7.5	5.5	5.2	4	5.1	6.1	6.3	7.8	**	7	6.5	-	8.1	6.3	6.3	6.4	6.6	7.4	7.5	5.8	6.6	5.9
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	9.96	9.85	-	ND	9.87	10.1	9.9	10.3	10.2	9.97	9.69	9.77	10	
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	10.4	10.1	-	ND	10.1	10.3	10.2	10.6	10.5	10.3	10.0	10.1	10.3	
Sodium	mg/L	0.1	200		4.1	2.3	2.7	5.5	2.8	3	3.7	5.5	**	3.9	3.6	3.5	6.6	11	16	3.1	2.8	2.7	5.8	3.0	2.5	2.7
Sulfate	mg/L	2	500		< 2	4	< 2	3	2	14	6	<2.0	**	<2	2.1	-	ND	<2	2	2	2	<2	2	2	2	
TDS (Calculated)	mg/L	1	500		49	24	19	21	24	42	30	34.95	**	33	26.8	-	56	31	44	26	18	45	33	22	19	
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	ND	-	ND	0.7	<5	<5	<0.5	0.7	<0.5	1.6	0.9	1.6
Turbidity	NTU	0.1	0.1-1	0.1-1	1.7	12.5	3.6	74	16.2	9.5	505	70	**	759	>1000	-	770	82	570	48	24.4	24.0	2.1	291.0	181	119

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 **Bold** indicates exceedance in aesthetic objective.

Starting in 2010 **Grey** indicates exceedance in maximum allowable concentration.

Table A.20 - TH-1 Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	19-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	25-Aug-04 DUP	18-Aug-05	18-Aug-05 TH1 Dup	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	19-Aug-14	22-Jul-15
Alkalinity (as CaCO ₃)	mg/L	5			1100	1020	1080	1140	1000	996	935	841	940	660	750	750	760	750	670	520	630	590	552	529	537	502	453	442
Ammonia (as NH ₃)	mg/L	0.03			48.9	71	67	62.5	72.5	72.1	73.4	72.4	<0.1	58	54	55	49	-	50	54	42	32	58.3	43.8	58.3	44.0	37.6	16.7
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	17.1	17.1	16.9	-	15.1	11.8	13.7	12.9	12.2	11.4	11.6	11.0	9.55	9.49	
Bicarbonate (as CaCO ₃)	mg/L	5			1100	1020	1080	1140	999	995	934	836	937.77	655	741	743	755	-	666	516	625	588	552	529	537	502	453	442
Calcium	mg/L	0.1			248	169	197	199	171	167	164	170	152	126	112	114	120	-	110	120	91	89	76.2	92.6	91.6	81.6	85.4	100
Carbonate (as CaCO ₃)	mg/L	10			2.06	1	1.6	4.3	1.2	0.9	1	5	2.21	5	9	7	ND	-	ND	<1	1	<1	<10	<10	<10	<10	<10	<10
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	16.6	16.9	16.3	-	15.6	16.9	13.6	12.5	14.1	12.6	14.1	13.9	11.5	10.4	
Chloride	mg/L	1	250		203	198	169	164	150	143	133	136	117	91	74	73	62	61	60	51	41	36	31	26	28	34	15	23
Color	TCU	5	15		31	90	70	27	27	27	20	21	128	25	16	17	18	18	15	13	15	21	11	9	13	11	<5	8
Conductance (RCAP)	uS/cm	1			2980	2710	2700	2520	2590	2590	2590	2590	2050	1380	1800	1810	1500	-	1400	1400	1300	1200	1270	1080	1090	1080	1020	940
Dissolved Organic Carbon	mg/L	0.5			58	46	38.7	36	30	30	27	22.6	34.9	-	<50	<50	-	-	-	-	-	-	21.2	0.8	15.2	<0.5	<0.5	<0.5
Hardness (as CaCO ₃)	mg/L	-			634	546	636	650	550	531	533	556	479.61	409	362	369	380	-	350	380	290	290	257	294	312	262	273	279
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	-	1.64	0.69	1.78	-	1.5	17.8	0.400	1.85	7.4	5.2	9.8	11.6	9.3	4.4
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-	1.5	1.41	0.346	-	0.361	0.453	0.563	0.446	0.45	0.62	0.42	0.46	0.48	0.09
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-	1.1	1.01	0.099	-	0.114	0.206	0.317	0.199	0.13	0.3	0.10	0.14	0.16	-0.23
Magnesium	mg/L	0.1			3.5	30.1	34.9	37.3	29.8	27.6	29.9	31.9	24.3	23	20.1	20.5	20	-	19	20	16	15	16.1	15.2	20.3	14.2	14.6	7.2
Nitrate (as NO ₃ -)	mg/L	0.05	10		-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	ND	-	0.55	-	<0.05	0.34	2.94	0.29	0.54	<0.05	<0.05	<0.05
Nitrate + Nitrite	mg/L	0.05			< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	<0.06	< 0.05	< 0.05	< 0.05	ND	-	0.57	<0.05	< 0.05	1.3	2.94	0.29	0.69	<0.05	<0.05
Nitrite	mg/L	0.05	1		-	-	-	-	-	-	-	-	-	<0.01	0.01	ND	ND	0.02	-	<0.01	0.95	<0.05	<0.05	0.15	<0.05	<0.05	<0.05	
Orthophosphate	mg/L	0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	<0.01	<0.3	< 0.01	0.01	< 0.01	ND	ND	ND	< 0.01	< 0.01	< 0.01	0.02	0.02	0.01	0.01	<0.01	<0.01
pH	Units	-	6.5-8.5		7.3	7	7.2	7.6	7.1	7.1	7.1	7.8	7.4	7.9	8.1	8	6.92	-	7.02	7.18	7.32	7.23	7.5	7.6	7.4	7.5	7.55	7.1
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	<0.1	<0.1	ND	-	ND	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	0.05	0.1	<0.02
Potassium	mg/L	0.1			19.4	35.9	41.7	45.2	42.1	42	52.6	51.6	49.1	47.8	45.9	45.8	43	-	46	45	43	45	39	39.8	35.1	39	37.7	
Reactive Silica (as SiO ₂)	mg/L	0.5			19.8	27.6	28.5	28	26.9	27.9	27.8	29.5	31.1	30	30	30	30	31	32	32	30	28.8	22.6	30.9	32.5	28.6	24.5	
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	-	6.6	6.59	6.57	-	6.66	6.73	6.76	6.78	7.05	6.98	6.98	7.06	7.07	7.01
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	-	7	6.99	6.82	-	6.91	6.97	7.00	7.03	7.37	7.3	7.30	7.38	7.39	7.33
Sodium	mg/L	0.1	200		230	176	188	186	159	138	149	132	176	107	99	101	94	-	87	87	73	68	77.4	51.7	61.4	96.4	44.7	47.8
Sulfate	mg/L	2	500		2	< 2	< 2	3	< 2	< 2	5	9	3.3	7	< 2	< 2	ND	ND	3	< 2	2	3	4	2	2	3	< 2	
TDS (Calculated)	mg/L	1	500		1450		1400	1430	1270	1240	1220	1160	1116.86	903	903	907	882	-	819	744	737	694	679	612	645	634	533	518
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	13	11	11	19	25.9	4.9	20.4	11.9	<0.5
Turbidity	NTU	0.1	0.1-1	0.1-1	308	524	12.5	0.8	1.3	1.3	0.3	375	36	330	302	294	230	-	210	220	220	84	127</td					

Table A.21 - TH-2 Inorganic Groundwater Chemistry

Compound	Units	RDL	AO	MAC	Sep-93	20-Dec-94	8-Mar-95	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	16-Aug-07 Dup A	28-Jul-08	12-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	19-Aug-14	22-Jul-15	
Alkalinity (as CaCO ₃)	mg/L	5			107	49	47	51	52	105	62	74	91	48	25	74	50	67	260	63	55	59	87	93	77	49	49	
Ammonia (as NH ₃)	mg/L	0.03			0.05	< 0.05	0.06	< 0.05	0.05	< 0.05	0.06	<0.05	<0.1	< 0.05	<0.05	0.19	ND	0.09	<0.05	0.11	<0.05	0.08	<0.05	<0.03	0.22	<0.03	<0.03	
Anion Sum	me/L	-			-	-	-	-	-	-	-	-	-	0.99	1.59	1.12	1.45	7.45	1.37	1.21	1.38	1.95	2.01	1.76	1.07	1.07		
Bicarbonate (as CaCO ₃)	mg/L	5			107	49	47	50.9	51.8	103	62	74	89.87	48	25	73.6	50	67	260	62	55	59	84	93	67	49	49	
Calcium	mg/L	0.1			32	9.6	9.7	10	9.9	5.4	3.9	7.4	3.6	8	8.7	3.3	9.5	3.7	110	0.5	8.1	7.7	1.3	2.2	1.0	7.4	4	
Carbonate (as CaCO ₃)	mg/L	10			0.25	0	0	< 1	0.2	1.9	< 1	<1	1.06	< 1	<1	ND	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10		
Cation Sum	me/L	-			-	-	-	-	-	-	-	-	-	1.27	1.6	1.16	2.08	7.96	2.17	1.20	0.98	1.45	2.36	1.51	1.26	1.21		
Chloride	mg/L	1	250		16.9	3.6	3.8	3.5	6.3	6.2	4.9	4.1	4.9	3	4	3.9	4	3	79	4	4	6	7	5	6	3	3	
Color	TCU	5	15		3	8	7	< 5	38	450	34	<5	>1000	26	<5	ND	ND	<5	5	<5	<5	8	<5	7	29	<5	6	
Conductance (RCap)	uS/cm	1			266	108	103	106	134	214	153	133	179	112	119	140	110	130	720	140	120	135	174	183	150	118	116	
Dissolved Organic Carbon	mg/L	0.5			4.5	< 0.5	0.7	0.5	< 0.5	229	< 0.5	1	1	-	<50	-	-	-	-	-	-	0.7	1.5	<0.5	1.7	<0.5	1.6	
Hardness (as CaCO ₃)	mg/L	-			102	30	31	31.1	30.9	16.4	12.6	23	21.51	24.9	26.3	9.9	29	13	330	3	24	23.8	3.7	6.7	2.5	23	12.5	
Ion Balance	%	-			-	-	-	-	-	-	-	-	-	-	12.3	0.0627	1.58	17.9	3.31	22.6	0.41	17.1	14.5	8.0	7.6	8	6.3	
Langelier Index (@ 20C)	-	-			-	-	-	-	-	-	-	-	-	-	-	-1.7	-1.25	-1.37	-0.883	0.309	-1.71	-1.17	-0.91	-1.13	-1.18	-0.87	-1.3	-1.9
Langelier Index (@ 4C)	-	-			-	-	-	-	-	-	-	-	-	-	-	-2.1	-1.5	-1.62	-1.13	0.061	-1.97	-1.420	-1.23	-1.45	-1.50	-1.19	-1.62	-2.22
Magnesium	mg/L	0.1			5.3	1.4	1.6	1.5	1.5	0.7	0.7	1.1	3.04	1.2	1.1	0.4	1.3	0.8	14	0.4	1.0	1.1	0.1	0.3	<0.1	1.1	0.6	
Nitrate (as NO ₃ -)	mg/L	0.05	10		-	-	-	-	-	-	-	-	-	-	0.08	0.06	0.09	-	-	0.12	0.12	0.41	0.12	0.10	0.51	0.06	0.07	
Nitrate + Nitrite	mg/L	0.05			< 0.05	< 0.05	< 0.05	0.07	0.07	0.05	0.07	<0.05	<0.06	0.06	0.08	0.06	0.09	0.1	0.07	0.12	0.12	0.41	0.12	0.10	0.68	0.06	0.07	
Nitrite	mg/L	0.05	1		-	-	-	-	-	-	-	-	-	-	<0.01	ND	ND	-	-	<0.01	<0.01	<0.05	<0.05	<0.05	0.17	<0.05	<0.05	
Orthophosphate	mg/L	0.01			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.06	<0.01	<0.3	0.01	<0.01	ND	ND	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
pH	Units	-	6.5-8.5		7.4	7	7.2	7.4	7.5	8.3	7.6	7.8	8.1	7.6	7.4	7.7	7.27	8.07	7.3	8.13	7.51	8	8.4	8.1	8.8	7.71	7.37	
Phosphorus	mg/L	0.02			-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	-	<0.1	<0.1	<0.1	<0.1	<0.02	0.02	<0.02	<0.02	
Potassium	mg/L	0.1			2.4	1	1.4	1.7	1.8	1.8	2.3	2.5	1.6	1.9	1.8	1.6	2	2.8	7.7	9.8	1.9	1.5	0.9	0.9	0.5	2.2	1.3	
Reactive Silica (as SiO ₂)	mg/L	0.5			11.4	10.6	11.6	10.8	10.1	10.1	8.6	9.5	205	10	11	11	10	11	13	9.8	10	9.8	12.1	12.7	8.3	10.1	10.2	
Saturation pH @ 20C	Units	-			-	-	-	-	-	-	-	-	-	-	9.1	8.95	8.64	8.95	6.99	9.84	8.68	8.91	9.53	9.28	9.70	9.01	9.27	
Saturation pH @ 4C	Units	-			-	-	-	-	-	-	-	-	-	-	9.5	9.2	8.89	9.2	7.24	10.1	8.93	9.23	9.85	9.60	10.00	9.33	9.59	
Sodium	mg/L	0.1	200		15.3	11.6	11.4	11.9	16.5	46.3	33.1	23.3	38.6	13.2	16	31	12	40	26	42	15	10	31.2	50.6	32.7	16.5	21.1	
Sulfate	mg/L	2	500		< 2	< 2	< 2	< 2	< 2	2	10	5	<2.0	5	18	ND	ND	<2	<2	<2	<2	<2	<2	<2	<2	<2		
TDS (Calculated)	mg/L	1	500		148	-	-	72	80	136	101	98	313.4	71	76	95.9	70	103	406	105	74	64	93	115	90	60	60	
Total Organic Carbon (C)	mg/L	0.5			-	-	-	-	-	-	-	-	-	-	-	ND	ND	4	11	1.4	<5	2	1.1	0.5	<5.0	<0.5		
Turbidity	NTU	0.1	0.1-1	0.1-1	27.9	96	62.5	1.4	26.5	155	2.4	471	2.2	108	233	350	12	230	360	390	23.00	162	136	130	1700	710	452	

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting

Table B.1 - MW-4A Groundwater Metals Chemistry

Notes

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDI

AO = CDWO Guideline / Standard Aesthetic Objective

AO = CDWQ Guideline / Standard Aesthetic Objective
MAC = CDWO Guideline / Standard Maximum Allowable Concentration

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration
Starting in 2010 Bold indicates exceedance in aesthetic objective

Starting in 2010 Bold indicates
Starting in 2010 Grey indicates

Table B.2 - MW-12B Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
Aluminum	ug/L	5	100		17	33	41	28	< 10	810	10	<20	< 10	<10	ND	18	<5.0	<5.0	6.3	<10	<10	<5	56	<5	<5
Antimony	ug/L	2		6	< 2	< 2	< 2	< 2	< 2	< 2	<2	<0.4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Arsenic	ug/L	2		10	43	5	2	14	10	10	2	6.4	2	<2	ND	ND	10.3	8	8.3	7	<2	<2	8	9	5
Barium	ug/L	5		1000	710	130	370	310	180	470	470	170	240	110	88	63	131	121	130	120	63	76	125	158	124
Beryllium	ug/L	2			< 5	< 5	< 5	< 5	< 5	< 5	<5	<0.5	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Bismuth	ug/L	2		-	-	-	-	-	-	-	-	-	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Boron	ug/L	5		5000	190	28	200	95	41	28	95	<100	27	6	ND	ND	11.5	6.6	5.9	6	7	17	39	9	5
Cadmium	ug/L	0.017		5	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	0.2	0.02	<0.3	< 0.3	<0.3	ND	ND	<0.017	0.21	0.07	<0.3	<0.3	0.114	0.092	0.018	<0.017
Chromium	ug/L	1		50	2	< 2	< 2	< 2	< 2	2	<2	<2	< 2	<2	ND	ND	<2.0	<2.0	<1.0	<2	<2	<1	<1	<1	<1
Cobalt	ug/L	1			7	1	7	3	2	7	4.7	1	2	1	ND	ND	1.21	1.24	1.25	1	<1	<1	1	2	2
Copper	ug/L	2	1000		< 10	6	2	< 2	2	15	<2	<2	< 2	<2	ND	ND	4.5	3.4	3.9	<2	<2	<2	<2	<2	<2
Iron	ug/L	50	300		4650	1400	4300	7000	2400	5500	<20	760	< 50	<50	ND	ND	2560	2040	2220	1570	<50	<50	2250	3630	2960
Lead	ug/L	0.5		10	5	0.6	0.7	< 0.5	< 0.5	11	<0.5	<1	< 0.5	<0.5	ND	0.6	<0.50	<0.50	<0.50	1.9	<0.5	<0.5	<0.5	<0.5	<0.5
Manganese	ug/L	2	50		6980	1400	9000	3200	1900	3500	6300	1380	3000	740	99	7	2500	2700	3120	2920	59	140	3070	4820	4790
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	0.043		
Molybdenum	ug/L	2			5	< 2	< 2	< 2	< 2	< 2	<2	<4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Nickel	ug/L	2			11	2	10	4	3	7	5	<3	2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	2	<2	<2
Selenium	ug/L	1	50		< 2	< 2	< 2	< 2	< 2	< 1	<1	< 2	<2	ND	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	<1	<1
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.1	<2	< 0.5	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1
Strontium	ug/L	5			260	56	200	78	59	56	120	40	76	39	39	46	53.3	41.6	47.4	43	32	35	41	39	36
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	<0.1	<0.8	0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	<2	<20	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Titanium	ug/L	2			-	-	-	-	-	-	-	-	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Uranium	ug/L	0.1	20	1	0.1	0.7	0.1	< 0.1	0.2	0.1	<0.15	0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	ug/L	2			< 2	< 2	< 2	< 2	< 2	6	<2	<2	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Zinc	ug/L	5	5000		< 10	31	29	9	12	21	5	<2	< 5	<5	ND	ND	39.8	25.8	<5.0	<5	<5	<5	9	15	6

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 **Bold** indicates exceedance in aesthetic objective.Starting in 2010 **Grey** indicates exceedance in maximum allowable concentration.

Table B.3 - MW-19B Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	12-Dec-07	29-Jul-08	11-Aug-09	29-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15
Aluminum	ug/L	5	100		20	940	4900	<20	< 10	10	31	ND	15.5	7.2	<5.0	<10	-	<5	14	11	<5
Antimony	ug/L	2		6	< 2	< 2	<2	<0.4	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2
Arsenic	ug/L	2		10	2	2	<2	1.7	2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2
Barium	ug/L	5		1000	7	11	57	1.1	< 5	<5	ND	ND	ND	<5	<5.0	<5	<5	<5	<5	<5	<5
Beryllium	ug/L	2			< 5	< 5	<5	<0.5	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2
Bismuth	ug/L	2			-	-	-	-	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2
Boron	ug/L	5		5000	12	12	17	<100	11	10	9.4	10	9	9.5	9.5	10	19	17	9	13	12
Cadmium	ug/L	0.017		5	< 0.3	0.2	0.59	<0.3	< 0.3	<0.3	ND	ND	ND	0.02	0.996	<0.3	0.019	0.057	<0.017	<0.017	<0.017
Chromium	ug/L	1		50	< 2	2	17	<2	< 2	<2	ND	ND	ND	<2	<1.0	<2	<1	<1	<1	<1	<1
Cobalt	ug/L	1			< 1	1	5.2	<1	< 1	<1	ND	ND	ND	<0.4	<0.40	<1	<1	<1	<1	<1	<1
Copper	ug/L	2	1000		2	6	25	<2	< 2	2	ND	ND	2.3	<2	<2.0	<2	<2	<2	<2	<2	<2
Iron	ug/L	50	300		< 50	4800	64000	<100	< 50	<50	ND	ND	ND	<50	<50	<50	<50	<50	<50	<50	<50
Lead	ug/L	0.5		10	< 0.5	11	49	<1	< 0.5	<0.5	ND	ND	ND	<0.5	<0.50	2	<0.5	<0.5	<0.5	0.6	<0.5
Manganese	ug/L	2	50		6	60	530	<4	< 2	4	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2
Mercury	ug/L	0.026		1	-	-	-	-	-	-	ND	ND	ND	-	-	-	-	-	<0.026	<0.026	<0.026
Molybdenum	ug/L	2			< 2	< 2	<2	<4	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2
Nickel	ug/L	2			< 2	< 2	11	<3	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2
Selenium	ug/L	1	50		< 2	< 1	<1	<1	< 2	<2	ND	ND	ND	<1	<1.0	<2	<1	<1	<1	<1	<1
Silver	ug/L	0.1			< 0.5	< 0.5	0.1	<2	< 0.5	<0.5	ND	ND	ND	<0.1	<0.10	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1
Strontium	ug/L	5			170	290	370	152	190	140	160	150	169	185	208	184	226	188	213	218	230
Thallium	ug/L	0.1			< 0.1	< 0.1	0.2	<0.8	< 0.1	<0.1	ND	ND	ND	<0.1	<0.10	<0.1	<0.1	<0.1	0.4	<0.1	<0.1
Tin	ug/L	2			< 2	< 2	<2	<20	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2
Titanium	ug/L	2			-	-	-	-	< 2	<2	ND	ND	ND	<2	<2.0	<2	<2	<2	<2	<2	<2
Uranium	ug/L	0.1	20		1.3	2.4	9	0.91	1.3	0.5	1.2	1.1	1.13	1.24	1.15	0.8	1.1	0.8	1.0	1.2	1.2
Vanadium	ug/L	2			2	11	31	2	2	<2	ND	ND	2.2	2	<2.0	<2	<2	<2	<2	<2	<2
Zinc	ug/L	5	5000		5	34	120	<2	< 5	46	5.2	ND	7.3	<5	<5.0	9	<5	<5	7	6	<5

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table B.4 - MW-20A Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	29-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	
Aluminum	ug/L	5	100		< 10	< 10	10	140	<20	< 10	<10	ND	13	<5.0	5.2	7.9	<10	-	<5	18	25	<5	
Antimony	ug/L	2		6	< 2	< 2	< 2	< 2	<0.4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Arsenic	ug/L	2		10	< 2	< 2	< 2	< 2	<0.6	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Barium	ug/L	5		1000	170	270	220	380	224	240	190	280	170	314	272	265	181	182	229	245	258	118	
Beryllium	ug/L	2			< 5	< 5	< 5	< 5	<0.5	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Bismuth	ug/L	2			-	-	-	-	-	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Boron	ug/L	5		5000	7	6	6	6	<100	6	8	6.9	9	6.7	6.9	6.4	8	26	14	11	12	10	
Cadmium	ug/L	0.017		5	< 0.3	< 0.3	0.3	0.35	<0.3	< 0.3	<0.3	ND	1.2	0.046	0.053	1.68	<0.3	1.05	0.766	1.690	3.18	1.19	
Chromium	ug/L	1		50	< 2	< 2	< 2	2	<2	< 2	<2	ND	ND	<2.0	<2.0	<1.0	<2	<1	<1	<1	<1	<1	
Cobalt	ug/L	1			< 1	< 1	1	2.2	<1	1	<1	ND	1	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	
Copper	ug/L	2		1000		3	< 2	2	3	<2	< 2	<2	ND	2	2.1	<2.0	<2.0	<2	<2	<2	3	<2	<2
Iron	ug/L	50		300		240	400	1500	26000	360	< 50	<50	690	270	12100	5810	105	1220	1780	<50	<50	2060	<50
Lead	ug/L	0.5		10	0.9	< 0.5	0.6	3.9	<1	< 0.5	<0.5	ND	0.7	<0.50	<0.50	<0.50	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Manganese	ug/L	2		50		79	470	640	820	125	180	280	320	280	358	260	237	83	97	377	<2	286	7
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<0.026
Molybdenum	ug/L	2			< 2	< 2	< 2	< 2	<4	< 2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Nickel	ug/L	2			< 2	< 2	< 2	< 2	<3	< 2	<2	ND	2	<2.0	<2.0	<2.0	<2	<2	2	3	<2	<2	
Selenium	ug/L	1		50	< 2	< 2	< 1	<1	<1	< 2	<2	ND	ND	<1.0	<1.0	<1.0	<2	<1	<1	<1	<1	<1	
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	<0.1	<2	< 0.5	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	
Strontium	ug/L	5			68	50	31	56	55	67	68	73	85	74	63.6	65.1	67	70	58	62	49	46	
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	<0.1	<0.8	< 0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Tin	ug/L	2			< 2	< 2	< 2	< 2	<20	< 2	<2	ND	3	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Titanium	ug/L	2			-	-	-	-	-	< 2	<2	ND	3	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2		
Uranium	ug/L	0.1		20	< 0.1	< 0.1	<0.1	0.1	<0.15	< 0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Vanadium	ug/L	2			< 2	< 2	< 2	< 2	2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2		
Zinc	ug/L	5		5000		66	12	12	23	7	< 5	<5	9.9	100	42.6	5	39.8	<5	8	<5	31	30	13

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 **Bold** indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table B.5 - MW-21C Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	12-Dec-07	28-Jul-08	10-Aug-09	26-Jul-10	14-Sep-11	4-Oct-12	20-Aug-14	21-Jul-15
Aluminum	ug/L	5	100		200	110	220	67	74.9	53.4	19.5	<10	-	<5	28	9
Antimony	ug/L	2		6	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2
Arsenic	ug/L	2		10	< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2
Barium	ug/L	5		1000	5	<5	5.9	ND	ND	18.7	<5.0	<5	<5	<5	<5	<5
Beryllium	ug/L	2			< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2
Bismuth	ug/L	2			< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2
Boron	ug/L	5		5000	< 5	<2	ND	6	5.3	6.0	6	12	10	10	7	14
Cadmium	ug/L	0.017		5	< 0.3	7	8	ND	ND	0.034	0.29	<0.3	<0.017	0.062	<0.017	<0.017
Chromium	ug/L	1		50	< 2	<0.3	ND	ND	ND	<2.0	<1.0	<2	<1	<1	<1	<1
Cobalt	ug/L	1			< 1	<2	ND	ND	ND	1.09	<0.40	<1	<1	<1	<1	<1
Copper	ug/L	2	1000		< 2	<1	ND	ND	ND	2.8	<2.0	<2	<2	<2	<2	<2
Iron	ug/L	50	300		320	<2	ND	ND	118	315	<50	<50	<50	<50	<50	<50
Lead	ug/L	0.5		10	< 0.5	120	230	ND	ND	<0.50	<0.50	0.9	<0.5	<0.5	<0.5	<0.5
Manganese	ug/L	2	50		7	<0.5	ND	3	2.9	307	<2.0	<2	<2	<2	<2	<2
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	<0.026	0.028	
Molybdenum	ug/L	2			< 2	8	8.9	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2
Nickel	ug/L	2			< 2	<2	ND	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2
Selenium	ug/L	1		50	< 2	<2	ND	ND	ND	<1.0	<1.0	<2	<1	<1	<1	<1
Silver	ug/L	0.1			< 0.5	<2	ND	ND	ND	<0.10	<0.10	<0.5	<0.1	<0.1	<0.1	<0.1
Strontium	ug/L	5			58	<0.5	ND	69	70.6	78.7	70.7	66	59	69	69	61
Thallium	ug/L	0.1			< 0.1	71	70	ND	ND	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/L	2			< 2	<0.1	ND	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2
Titanium	ug/L	2			19	<5	ND	4	5.6	3.8	<2.0	<2	<2	<2	<2	<2
Uranium	ug/L	0.1		20	0.1	<2	ND	ND	ND	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	ug/L	2			< 2	10	15	ND	ND	<2.0	<2.0	<2	<2	<2	<2	<2
Zinc	ug/L	5	5000		< 5	<0.1	0.1	ND	ND	24.2	14.1	<5	<5	<5	7	<5

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 **Bold** indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table B.6 - MW-22A Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	26-Jul-00 Lab Dup.	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	
Aluminum	ug/L	5	100		5	< 100	< 10	< 10	< 10	1000	3700	120	20	< 10	< 10	<100	ND	<5.0	<5.0	12.4	<10	<10	<5	21	<5	<5	
Antimony	ug/L	2		6	9	< 20	< 2	< 2	< 2	< 20	< 20	<2	<0.4	< 2	< 2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Arsenic	ug/L	2		10	36	< 20	100	110	97	61	92	110	106	2	< 2	27	ND	101	104	111	<2	107	<2	75	88	106	
Barium	ug/L	5		1000	990	1800	4100	4000	4000	4300	4600	3500	602	6	150	1300	920	1230	1080	1090	357	815	730	938	910	1110	
Beryllium	ug/L	2			< 5	< 50	< 5	< 5	< 5	< 50	< 50	<5	<0.5	< 2	< 2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Bismuth	ug/L	2			-	-	-	-	-	-	-	-	-	< 2	< 2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Boron	ug/L	5		5000	160	1000	1300	1400	1600	1800	2100	830	7	780	470	630	387	429	295	135	212	336	291	229	322		
Cadmium	ug/L	0.017		5	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 1	< 1	0.05	<0.3	< 0.3	<0.3	<3	ND	0.023	<0.017	0.358	<0.3	<0.3	<0.017	0.022	<0.017	<0.017	
Chromium	ug/L	1		50	5	< 20	2	10	6	< 20	< 20	2	3	< 2	< 2	<20	ND	2.2	3.3	1.4	3	<2	1	<1	<1	2	
Cobalt	ug/L	1			35	50	48	33	37	38	45	26	21	< 1	3	26	28	23	19.3	23.3	<1	18	18	26	17	16	
Copper	ug/L	2		1000	10	< 20	< 2	2	7	40	90	4	21	< 2	< 2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Iron	ug/L	50	300		118000	1500	76000	50000	50000	30000	53000	39000	41500	< 50	1100	22000	16000	45900	33700	37000	<50	56100	990	56000	36900	74400	
Lead	ug/L	0.5		10	0.2	< 1	0.5	< 0.5	< 0.5	11	29	1.1	<1	< 0.5	< 0.5	<5	ND	<0.50	<0.50	<0.50	1.4	0.5	<0.5	<0.5	<0.5	<0.5	
Manganese	ug/L	2	50		2290	4800	7200	4100	4300	3700	4800	3200	2740	39	350	3600	3300	4220	2570	4330	656	4800	5030	4220	3020	7770	
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.049	<0.026	<0.026		
Molybdenum	ug/L	2			< 2	< 20	3	3	3	< 20	< 20	3	<4	< 2	< 2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Nickel	ug/L	2			29	60	48	47	49	53	60	44	30	< 2	4	25	25	18	17.3	15.4	3	9	12	19	10	10	
Selenium	ug/L	1		50	< 2	< 20	< 2	< 2	< 2	< 10	< 10	<1	1	< 2	< 2	<20	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	2	
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	<5	<0.1	<2	< 0.5	< 0.5	<5	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1
Strontium	ug/L	5			300	940	1100	1100	1200	1000	1100	1000	906	420	84	670	560	521	475	436	154	411	415	418	327	392	
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 1	0.1	<0.8	< 0.1	< 0.1	<1	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
Tin	ug/L	2			< 2	< 20	< 2	< 2	< 2	< 20	< 20	<2	<20	< 2	< 2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Titanium	ug/L	2			-	-	-	-	-	-	-	-	-	< 2	< 2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Uranium	ug/L	0.1		20	0.1	< 0.1	0.2	0.3	0.4	3.2	5	1.2	1.04	10	0.1	<1	ND	<0.10	<0.10	0.12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Vanadium	ug/L	2			< 2	< 2	3	3	2	< 20	< 20	4	6	< 2	< 2	<20	ND	<2.0	<2.0	<2.0	<2	3	3	<2	<2	2	
Zinc	ug/L	5	5000		20	< 50	9	11	24	< 200	< 200	10	10	< 5	<5	160	ND	22.4	5.5	<5.0	5	5	<5	23	8	<5	

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table B.7 - MW-22B Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
Aluminum	ug/L	5	100		5	260	26	< 20	30	2300	<50	<20	< 100	<100	<100	ND	<50	<50	<10	<10	<5	29	<5	<5	
Antimony	ug/L	2		6	12	< 2	< 2	< 2	< 2	< 20	<20	<0.4	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	
Arsenic	ug/L	2		10	10	13	15	4	7	22	<20	14.2	< 20	<20	<20	ND	<20	<20	41	57	12	23	26	36	
Barium	ug/L	5		1000	1400	420	520	350	510	900	580	548	720	590	510	1000	596	581	572	735	3250	672	734	896	814
Beryllium	ug/L	2			< 5	< 5	< 5	< 5	< 5	< 50	<50	<0.5	< 20	<20	<20	ND	<20	<20	<2	<2	<2	<2	<2	<2	
Bismuth	ug/L	2			-	-	-	-	-	-	-	-	< 20	<20	<20	ND	<20	<20	<2	<2	<2	<2	<2	<2	
Boron	ug/L	5		5000	320	120	160	180	250	330	370	280	440	600	500	350	567	504	470	601	690	726	541	480	449
Cadmium	ug/L	0.017		5	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 1	0.5	<0.3	< 3	<3	<3	ND	<0.17	<0.17	0.8	<0.3	<0.3	0.023	<0.017	<0.017	<0.017
Chromium	ug/L	1		50	2	8	< 2	< 2	2	< 20	<20	<2	< 20	<20	<20	3	<20	<20	<10	4	<2	3	<1	<1	8
Cobalt	ug/L	1			34	22	11	5	8	23	10	6	17	15	13	24	10.4	9.5	9.6	10	7	10	16	13	9
Copper	ug/L	2	1000		10	14	< 2	2	4	31	<20	9	< 20	<20	<20	ND	<20	<20	<2	<2	<2	<2	<2	<2	<2
Iron	ug/L	50	300		3200	9900	14000	720	1600	18000	8800	11500	1300	<500	2400	7100	10100	8820	8690	15500	15900	<50	14200	10400	14200
Lead	ug/L	0.5		10	0.2	2	1.1	< 0.5	0.9	22	<5.0	<1	< 5	<5	<5	ND	<5.0	<5.0	<5.0	2	<0.5	<0.5	<0.5	<0.5	<0.5
Manganese	ug/L	2	50		5280	3100	4300	270	1700	6900	2400	736	4300	4400	4500	4100	4070	4160	3650	4490	641	4520	4260	4270	4870
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	
Molybdenum	ug/L	2			20	6	5	3	4	< 20	<20	<4	23	<20	<20	ND	<20	<20	<2	<2	<2	<2	<2	<2	
Nickel	ug/L	2			80	20	15	14	28	38	26	24	77	36	30	17	32	28	27	22	15	22	35	25	16
Selenium	ug/L	1	50	4	< 2	< 2	< 2	< 2	< 10	<10	3	< 20	<20	<20	ND	<10	<10	<10	5	<2	3	2	<1	11	
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	<1	< 2	< 5	<5	<5	ND	<1.0	<1.0	<1.0	<0.5	<0.5	<0.1	<0.1	<0.1	
Strontium	ug/L	5			1500	2400	2500	2400	2300	3000	2900	2840	3100	2800	2500	450	2540	2460	2410	2280	823	2190	1990	2030	1970
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<1	< 0.8	< 1	< 1	< 1	ND	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1	
Tin	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 20	<20	<20	< 20	< 20	< 20	ND	<20	<20	<20	<2	<2	<2	<2	<2	
Titanium	ug/L	2			-	-	-	-	-	-	-	-	< 20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	
Uranium	ug/L	0.1	20	2	2.8	3.9	1.8	7.6	13	7.1	4.1	75	15	9.6	0.1	9.9	12.0	11	3.3	<0.1	22.2	5.0	11.5	7.8	
Vanadium	ug/L	2			< 2	3	< 2	< 2	< 2	< 20	<20	3	< 20	<20	<20	ND	<20	<20	5	2	3	<2	<2	3	
Zinc	ug/L	5	5000		20	53	9	11	18	170	24	7	< 50	<50	<50	14	<50	<50	<5	<5	<5	12	17	<5	

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 **Bold** indicates exceedance in aesthetic objective.Starting in 2010 **Grey** indicates exceedance in maximum allowable concentration.

Table B.8 - MW-22C Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	20-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
Aluminum	ug/L	5	100		18	170	170	69	110	260	19	<20	<100	<10	ND	44	5.2	<5.0	<5.0	<10	<10	<5	18	6	<5
Antimony	ug/L	2		6	6	< 2	< 2	< 2	< 2	< 2	< 2	<0.4	< 20	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Arsenic	ug/L	2		10	< 20	2	< 2	2	2	3	2	2	32	2	ND	ND	<2.0	2.2	<2.0	2	<2	<2	<2	<2	2
Barium	ug/L	5		1000	6	13	6	5	61	19	11	12	1900	8	6.7	9	10.9	8.5	7.5	7	5	6	25	8	7
Beryllium	ug/L	2			< 5	< 5	< 5	< 5	< 5	< 5	< 5	<0.5	< 20	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Bismuth	ug/L	2			-	-	-	-	-	-	-	-	< 20	< 2	ND	ND	<2.0	< 20	<2.0	<2	<2	<2	<2	<2	<2
Boron	ug/L	5		5000	10	12	9	12	21	< 20	12	< 100	1200	9	8.9	9	13.5	9.9	9.4	10	10	25	48	12	17
Cadmium	ug/L	0.017		5	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 0.1	0.02	<0.3	< 3	< 0.3	ND	0.3	0.019	0.027	0.025	< 0.3	< 0.3	< 0.017	< 0.017	< 0.017	< 0.017
Chromium	ug/L	1		50	< 2	3	< 2	< 2	< 2	< 2	< 2	< 2	< 20	< 2	ND	ND	< 2.0	< 2.0	2.5	< 2	< 2	1	< 1	< 1	1
Cobalt	ug/L	1			< 1	1	1	1	1	1	0.4	< 1	28	< 1	ND	ND	< 0.40	< 0.40	< 0.40	< 1	< 1	< 1	< 1	< 1	< 1
Copper	ug/L	2	1000		10	15	2	4	9	14	< 2	6	< 20	< 2	ND	ND	< 2.0	< 2.0	< 2.0	2	< 2	< 2	35	< 2	< 2
Iron	ug/L	50	300		60	210	120	120	230	250	20	110	23000	< 50	ND	ND	109	156	145	176	135	< 50	150	156	94
Lead	ug/L	0.5		10	0.1	1.1	0.6	0.7	0.5	1.2	< 0.5	< 1	< 5	< 0.5	ND	ND	< 0.50	< 0.50	< 0.50	1.5	< 0.5	< 0.5	2	< 0.5	< 0.5
Manganese	ug/L	2	50		40	41	15	15	93	94	100	83	3800	24	ND	46	62.4	54.2	51.4	47	47	10	51	44	43
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.087	< 0.026	< 0.026	
Molybdenum	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 4	< 20	< 2	ND	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	< 2	< 2
Nickel	ug/L	2			< 2	2	< 2	< 2	2	2	< 2	< 3	35	< 2	ND	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	3	< 2	< 2
Selenium	ug/L	1	50		< 2	< 2	< 2	< 2	< 2	< 2	< 1	< 1	< 20	< 2	ND	ND	< 1.0	< 1.0	< 1.0	< 2	< 2	< 1	< 1	< 1	2
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 2	< 5	< 0.5	ND	ND	< 0.10	< 0.10	< 0.10	< 0.5	< 0.5	< 0.1	< 0.1	< 0.1
Strontrium	ug/L	5			130	150	230	270	330	460	380	429	850	400	400	470	534	589	630	580	753	721	740	697	786
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.8	< 1	< 0.1	ND	ND	< 0.10	< 0.10	< 0.10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Tin	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 20	< 20	< 2	ND	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	< 2	< 2
Titanium	ug/L	2			-	-	-	-	-	-	-	-	< 20	< 2	ND	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	< 2	< 2
Uranium	ug/L	0.1		20	1.5	5.1	8.3	7.2	8.7	12	40	20.8	< 1	8.6	28	24	19.4	18.7	23.8	17	25.2	26.5	27.4	33.6	34.7
Vanadium	ug/L	2			< 2	2	< 2	< 2	< 2	6	4	3	< 20	< 2	6.4	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	5	5000		< 10	37	5	22	18	13	6	7	< 50	< 5	ND	5	50.8	10.8	< 5.0	< 5	< 5	< 5	29	6	< 5

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 **Bold** indicates exceedance in aesthetic objective.Starting in 2010 **Grey** indicates exceedance in maximum allowable concentration.

Table B.9 - MW-23A Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
Aluminum	ug/L	5	100		9	100	47	140	20	770	40	<20	30	<10	ND	<5.0	<5.0	<5.0	<10	<10	<5	16	5	<5
Antimony	ug/L	2		6	8	< 2	< 2	< 2	< 2	< 2	< 2	<0.4	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Arsenic	ug/L	2		10	4	< 2	< 2	< 2	< 2	< 2	< 2	<0.6	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Barium	ug/L	5		1000	140	120	56	65	90	98	100	150	42	99	140	103	120	113	158	145	228	215	110	87
Beryllium	ug/L	2			< 5	< 5	< 5	< 5	< 5	< 5	< 5	<0.5	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Bismuth	ug/L	2			-	-	-	-	-	-	-	-	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Boron	ug/L	5	5000	18	20	7	11	12	< 20	14	< 100	8	11	9	11.1	10.7	10.1	8	8	20	42	12	9	
Cadmium	ug/L	0.017		5	< 0.5	< 0.5	< 0.3	< 0.3	0.3	0.7	<0.3	<0.3	<0.3	0.4	ND	0.086	1.04	0.105	<0.3	0.8	1.44	0.19	0.095	0.112
Chromium	ug/L	1		50	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	ND	< 2.0	< 2.0	2	< 2	< 2	2	< 1	< 1	< 1
Cobalt	ug/L	1			4	< 1	1	1	< 1	< 1	< 1	< 1	< 1	< 1	ND	< 0.40	< 0.40	< 0.40	< 1	< 1	< 1	< 1	< 1	< 1
Copper	ug/L	2	1000		10	23	< 2	< 2	5	< 2	< 2	3	< 2	< 2	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	< 2	< 2
Iron	ug/L	50	300		5000	180	71	200	140	540	60	160	<50	<50	ND	<50	<50	<50	<50	<50	<50	<50	<50	<50
Lead	ug/L	0.5		10	0.1	0.4	0.2	< 0.5	< 0.5	0.6	0.5	<1	<0.5	<0.5	ND	<0.50	<0.50	<0.50	2	<0.5	<0.5	<0.5	<0.5	<0.5
Manganese	ug/L	2	50		3120	1100	890	900	860	770	880	1120	680	870	1100	900	1040	813	1160	1070	2020	2240	1010	1160
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	0.058	<0.026	
Molybdenum	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 4	< 2	< 2	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	< 2	< 2
Nickel	ug/L	2			3	4	< 2	2	2	< 2	< 2	< 3	< 2	< 2	3	< 2.0	2.3	< 2.0	3	3	4	7	< 2	< 2
Selenium	ug/L	1		50	< 2	< 2	< 2	< 2	< 2	< 1	< 2	< 1	< 2	< 2	ND	< 1.0	< 1.0	< 1.0	< 2	< 2	< 1	< 1	< 1	< 1
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 0.5	ND	< 0.10	< 0.10	< 0.10	< 0.5	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1
Strontium	ug/L	5			46	54	23	31	37	44	52	68	22	46	56	55.6	48.4	46.1	55	36	83	98	42	36
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.8	< 0.1	< 0.1	ND	< 0.10	< 0.10	< 0.10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Tin	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 20	< 2	< 2	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	< 2	< 2
Titanium	ug/L	2			-	-	-	-	-	-	-	-	4	2	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	< 2	< 2
Uranium	ug/L	0.1		20	0.3	0.2	0.1	0.1	0.1	0.4	0.9	0.37	0.3	0.3	0.1	0.29	0.1	0.17	<0.1	<0.1	0.1	0.3	0.2	<0.1
Vanadium	ug/L	2			< 2	< 2	< 2	< 2	< 2	3	< 2	< 2	< 200	< 2	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	5	5000		10	59	12	11	27	5	10	< 2	< 5	< 5	ND	21.8	27.2	5.7	< 5	8	< 5	8	< 5	5

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table B.10 - MW-23B Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
Aluminum	ug/L	5	100		7	50	65	72	< 20	760	10	30	< 10	<10	ND	14.3	<5.0	<5.0	<10	<10	<5	34	5	<5
Antimony	ug/L	2		6	3	< 2	< 2	< 2	< 2	< 2	<2	<0.4	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Arsenic	ug/L	2		10	14	7	16	15	9	16	11	5.3	2	<2	ND	14	9.3	10.4	11	11	<2	9	8	8
Barium	ug/L	5		1000	280	290	320	270	290	550	280	199	270	220	260	269	257	267	234	255	276	258	312	238
Beryllium	ug/L	2			< 5	< 5	< 5	< 5	< 5	< 5	<5	<0.5	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Bismuth	ug/L	2		-	-	-	-	-	-	-	-	-	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Boron	ug/L	5		5000	28	28	27	24	27	21	19	<100	19	18	19	19	16.6	18.1	19	19	22	39	23	19
Cadmium	ug/L	0.017		5	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	1.8	<0.3	<0.3	< 0.3	<0.3	ND	0.087	0.040	0.045	<0.3	1.4	0.150	0.122	0.057	0.096
Chromium	ug/L	1		50	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	< 2	<2	ND	<2.0	<2.0	2.2	<2	<2	1	<1	<1	<1
Cobalt	ug/L	1			6	4	5	5	4	4	3	2	3	3	3	2.71	2.55	2.73	2	3	2	3	3	2
Copper	ug/L	2	1000		10	8	< 2	< 2	4	18	<2	<2	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Iron	ug/L	50	300		3950	1700	11000	8300	4900	2900	6200	3110	130	<50	ND	5370	4860	5010	5370	6520	<50	4480	3520	5020
Lead	ug/L	0.5		10	< 0.5	0.6	0.3	< 0.5	< 0.5	5.7	<0.5	<1	< 0.5	<0.5	ND	0.5	<0.50	<0.50	1.8	<0.5	<0.5	<0.5	<0.5	<0.5
Manganese	ug/L	2	50		11400	3700	4900	4000	3600	3600	3500	3340	3300	2900	3400	3260	2820	3180	3160	4040	3950	3280	3350	4220
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<0.026
Molybdenum	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	<2	<4	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Nickel	ug/L	2			6	4	3	3	4	5	3	<3	4	3	2	3.6	2.8	3.3	3	3	<2	4	3	3
Selenium	ug/L	1	50	< 2	< 2	< 2	< 2	< 2	< 2	< 1	<2	<1	< 2	<2	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	<1
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<2	< 0.5	<0.5	ND	<10.0	<10.0	<10.0	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1
Strontium	ug/L	5		100	77	75	69	79	70	67	73	66	64	76	75.5	62.6	65.6	65	70	78	69	56	64	
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	<0.1	<0.8	< 0.1	<0.1	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	<2	<20	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Titanium	ug/L	2			-	-	-	-	-	-	-	< 2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Uranium	ug/L	0.1		20	2	0.1	0.1	0.1	0.6	<0.1	0.66	< 0.1	<0.1	0.2	<0.10	<0.10	<0.10	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1
Vanadium	ug/L	2			< 2	< 2	< 2	< 2	< 2	7	<2	<2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Zinc	ug/L	5	5000		< 10	22	5	9	15	8	6	<2	5	<5	ND	31.2	6.1	<5.0	5	8	<5	10	6	6

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table B.11 - MW-23C Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	25-Aug-04 Lab DUP	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
Aluminum	ug/L	5	100		26	330	130	380	< 20	2400	100	80	30	30	30	20	<5.0	7.3	<5.0	<10	<10	<5	24	15	<5
Antimony	ug/L	2		6	< 2	< 2	< 2	< 2	< 2	< 2	< 2	<0.4	< 2	< 2	< 2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Arsenic	ug/L	2		10	8	3	7	7	10	10	6	2	6	6	6	6	4.6	6.7	6.3	7	5	5	6	7	7
Barium	ug/L	5		1000	5	52	13	18	230	290	28	33.9	29	18	18	33	49.5	16.4	28.9	17	33	40	36	41	43
Beryllium	ug/L	2			< 5	< 5	< 5	< 5	< 5	< 5	< 5	<0.5	< 2	< 2	< 2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Bismuth	ug/L	2			-	-	-	-	-	-	-	-	< 2	< 2	< 2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Boron	ug/L	5		5000	16	16	14	14	100	14	13	<100	9	13	13	11	14.5	13.3	11.6	13	12	19	72	14	12
Cadmium	ug/L	0.017		5	0.5	< 0.5	< 0.3	< 0.3	< 0.3	0.1	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	ND	0.021	<0.017	<0.017	<0.3	<0.3	0.131	<0.017	0.071	<0.017
Chromium	ug/L	1		50	2	4	3	3	3	6	4	2	2	2	2	2	2.5	2.0	3	2	2	3	2	2	2
Cobalt	ug/L	1			1	< 1	1	1	2	4	< 1	< 1	< 1	< 1	< 1	ND	<0.40	<0.40	<0.40	<1	< 1	< 1	< 1	< 1	< 1
Copper	ug/L	2	1000		< 10	< 2	< 2	< 2	6	10	< 2	< 2	< 2	< 2	< 2	ND	4.3	2.1	<2.0	<2	<2	<2	<2	<2	<2
Iron	ug/L	50	300		40	180	140	310	2500	940	240	<100	< 50	< 50	< 50	ND	<50	<50	<50	<50	<50	<50	<50	<50	<50
Lead	ug/L	0.5		10	< 0.1	0.5	0.2	0.7	< 0.5	8	0.5	< 1	< 0.5	< 0.5	< 0.5	ND	<0.50	<0.50	<0.50	1.4	<0.5	<0.5	<0.5	<0.5	<0.5
Manganese	ug/L	2	50		20	66	13	33	260	250	5	11	2	< 2	< 2	4	4.8	<2.0	<2.0	<2	<2	2	<2	<2	3
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	0.082	<0.026	
Molybdenum	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 4	< 2	< 2	< 2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Nickel	ug/L	2			< 2	< 2	< 2	< 2	< 2	4	3	< 2	< 3	< 2	< 2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Selenium	ug/L	1	50		< 2	< 2	< 2	< 2	< 2	< 2	< 1	< 2	< 1	< 2	< 2	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	<1
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	
Strontium	ug/L	5			84	160	78	92	160	480	130	125	89	96	94	82	120	82.8	92	81	107	117	108	78	75
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.8	< 0.1	< 0.1	< 0.1	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 20	< 2	< 2	< 2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2
Titanium	ug/L	2			-	-	-	-	-	-	-	-	7	3	5	3	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Uranium	ug/L	0.1	20		3.7	2.9	5.3	4.9	4.8	6.1	3.8	1.82	3.5	3.9	3.9	4.2	1.95	3.67	4.52	4.7	3	3.3	4.4	4.4	3.8
Vanadium	ug/L	2			< 2	2	6	6	5	18	4	< 2	4	4	4	4	2.7	5.0	4	4	3	3	4	4	4
Zinc	ug/L	5	5000		< 10	7	6	10	15	18	6	< 2	< 5	< 5	< 5	ND	42.5	21.8	<5.0	6	<5	<5	8	8	<5

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 **Bold** indicates exceedance in aesthetic objective.Starting in 2010 **Grey** indicates exceedance in maximum allowable concentration.

Table B.12 - MW-24A Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	28-Jul-10	21-Sep-11	5-Jul-13	19-Aug-14	22-Jul-15
Aluminum	ug/L	5	100		56	36	30	10	100	650	20	<20	< 10	<10	13	ND	<5.0	8.9	<5.0	<10	<10	31	11	<5
Antimony	ug/L	2		6	8	< 2	< 2	< 2	< 2	< 2	< 2	<0.4	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2
Arsenic	ug/L	2		10	< 2	< 2	< 2	< 2	< 2	2	< 2	1.1	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	128	<2	<2	<2	<2
Barium	ug/L	5		1000	560	770	700	530	440	990	1200	983	600	1200	820	1100	522	579	515	900	383	378	529	53
Beryllium	ug/L	2			< 5	< 5	< 5	< 5	< 5	< 5	< 5	<0.5	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2
Bismuth	ug/L	2			-	-	-	-	-	-	-	-	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2
Boron	ug/L	5		5000	290	150	110	130	170	410	580	180	220	290	170	360	233	126	153	322	245	182	89	39
Cadmium	ug/L	0.017		5	0.5	< 0.5	< 0.3	< 0.3	< 0.3	0.4	0.7	0.3	0.7	0.3	0.4	ND	0.19	0.357	0.36	<0.3	1.2	0.329	0.295	<0.017
Chromium	ug/L	1		50	3	< 2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	ND	ND	<2.0	<2.0	<1.0	3	2	<1	<1	1
Cobalt	ug/L	1			2	1	1	2	2	3	2	1	2	1	ND	ND	0.46	<0.40	<0.40	15	<1	<1	<1	<1
Copper	ug/L	2		1000		10	11	3	4	5	13	4	7	3	2	ND	5	2.1	2.1	<2.0	<2	2	<2	<2
Iron	ug/L	50	300		< 20	120	< 20	60	150	1000	<50	<100	< 50	< 50	ND	ND	<50	<50	<50	39000	<50	<50	<50	<50
Lead	ug/L	0.5		10	0.2	0.4	0.9	< 0.5	0.5	2.8	<0.5	< 1	< 0.5	< 0.5	ND	ND	<0.50	<0.50	<0.50	2.1	<0.5	<0.5	<0.5	<0.5
Manganese	ug/L	2	50		310	8600	2000	5400	5900	6800	8100	4020	2500	1600	4000	1600	937	1860	1370	2770	1270	1150	344	9
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.101	<0.026	<0.026	<0.026
Molybdenum	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 4	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2
Nickel	ug/L	2			7	4	4	3	5	9	12	7	8	7	5.2	7	3.7	3.8	4.7	12	6	3	3	<2
Selenium	ug/L	1		50	< 2	< 2	< 2	< 2	< 2	< 1	< 2	2	< 2	< 2	ND	ND	<1.0	<1.0	<1.0	2	<2	<1	<1	<1
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2	< 0.5	< 0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1
Strontium	ug/L	5			350	290	310	170	160	230	340	353	210	400	260	420	144	158	161	430	140	112	125	17
Thallium	ug/L	0.1			< 0.1	0.1	< 0.1	0.1	< 0.1	0.2	0.2	<0.8	0.1	0.1	0.1	0.1	0.11	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 20	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2
Titanium	ug/L	2			-	-	-	-	-	-	-	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	
Uranium	ug/L	0.1		20	0.3	0.2	0.2	< 0.1	0.2	0.3	0.1	0.16	0.1	0.1	0.1	0.2	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	ug/L	2			2	< 2	< 2	< 2	< 2	3	< 2	< 2	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	4	<2	<2	<2	<2
Zinc	ug/L	5	5000		10	30	5	79	12	8	24	6	7	< 5	ND	ND	27.7	23.3	11.9	<5	9	10	6	<5

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO - CDWQ Guideline / Standard Aesthetic Objective

MAC - CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 **Bold** indicates exceedance in aesthetic objective.Starting in 2010 **Grey** indicates exceedance in maximum allowable concentration.

Table B.13 - MW-24B Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	
Aluminum	ug/L	5	100		< 5	< 10	< 10	< 10	< 20	1200	<100	<20	< 100	<100	ND	<50	<50	<50	<10	<10	<5	31	<5	<5		
Antimony	ug/L	2		6	< 2	< 2	< 2	< 2	< 2	< 20	<20	<0.4	< 20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2		
Arsenic	ug/L	2		10	14	39	54	59	35	46	43	39.2	< 20	<20	12	52	57	61	135	97	8	63	12	57		
Barium	ug/L	5		1000	3800	3600	4600	4200	3400	5700	4400	4010	1900	1900	1800	1500	2230	2090	2080	1900	1840	969	2050	2150	1810	
Beryllium	ug/L	2			< 5	< 5	< 5	< 5	< 50	<50	<0.5	< 20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2		
Bismuth	ug/L	2			-	-	-	-	-	-	-	< 20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2		
Boron	ug/L	5		5000	920	1400	1400	1400	1600	3200	2600	1300	1800	1500	1300	1400	1320	1030	970	1190	1060	899	1430	3130	949	
Cadmium	ug/L	0.017		5	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 1	<3	<0.3	< 3	<3	<3	ND	<0.17	<0.17	<0.17	<0.3	<0.3	0.045	<0.017	0.029	0.105	
Chromium	ug/L	1		50	6	13	3	10	5	< 20	<20	4	< 20	<20	7	<20	<20	12	4	4	3	30	<1	7		
Cobalt	ug/L	1			38	44	33	33	32	30	26	17	23	19	17	16	15.9	14.6	18.1	10	10	10	20	14	10	
Copper	ug/L	2		1000		< 10	3	4	2	4	30	<20	28	< 20	<20	22	ND	<20	<20	<2	<2	<2	<2	<2	<2	
Iron	ug/L	50	300		38200	48000	67000	62000	33000	36000	39000	47700	< 500	<500	7900	ND	37100	36800	35100	36900	37300	<50	44600	19000	42000	
Lead	ug/L	0.5		10	0.3	0.1	0.8	< 0.5	< 0.5	16	<5	<1	< 5	<5	<5	ND	<5.0	<5.0	2.4	<0.5	<0.5	0.6	<0.5			
Manganese	ug/L	2		50		6650	4800	4900	3800	3800	4500	3200	4810	3000	3600	3600	3000	3350	2860	3520	3630	3110	3290	3280	4440	1940
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026		
Molybdenum	ug/L	2			2	2	< 2	< 2	< 2	< 20	<20	<4	< 20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2		
Nickel	ug/L	2			94	56	42	42	43	54	49	29	40	37	30	24	24	22	22	15	12	12	25	17	11	
Selenium	ug/L	1		50	4	< 2	< 2	< 2	< 5	< 10	<20	4	< 20	<20	ND	<10	<10	<10	5	3	2	2	<1	10		
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	<5	<2	< 5	<5	<5	ND	<1.0	<1.0	<1.0	<0.5	<0.5	<0.1	<0.1	<0.1		
Strontium	ug/L	5			1500	1500	1400	1200	1100	1600	1500	1100	1100	1000	840	820	831	771	796	795	830	637	858	846	761	
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<1	<0.8	< 1	<1	<1	ND	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1		
Tin	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 20	<20	<20	< 20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2		
Titanium	ug/L	2			-	-	-	-	-	-	-	-	-	-	<20	<20	<20	<20	<2	<2	<2	<2	<2	<2		
Uranium	ug/L	0.1		20	2	0.2	0.2	0.2	0.8	4.2	<1	1.01	1.4	1.7	2.2	1.5	<1.0	<1.0	<1.0	0.2	0.2	<0.1	0.3	4.1	0.1	
Vanadium	ug/L	2			< 2	3	6	4	2	< 20	<20	9	< 20	<20	<20	ND	<20	<20	<20	8	6	4	<2	<2	4	
Zinc	ug/L	5	5000		20	27	9	63	21	22	44	6	50	<50	<50	ND	<50	<50	<50	5	<5	<5	8	<5	<5	

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective

Starting in 2010 Grey indicates exceedance in maximum allowable concentration

Table B.14 - MW-25B Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	19-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Aug-01 Duplicate	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	16-Aug-07 Dup A	28-Jul-08	10-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	19-Aug-14	22-Jul-15
Aluminum	ug/L	5	100		7	22	160	39	50	450	26	19	<20	<10	<10	ND	ND	6.3	98.4	<5.0	<5.0	<10	<10	<5	15	9	<5
Antimony	ug/L	2		6	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Arsenic	ug/L	2		10	<2	2	2	<2	2	2	2	1.5	<2	<2	ND	3	2	<2.0	<2.0	2.8	5	<2	3	3	5	8	
Barium	ug/L	5		1000	12	23	5	11	16	11	6	5	5.3	24	13	7.2	42	22.1	<5.0	11.3	12.7	29	<5	27	14	77	35
Beryllium	ug/L	2		<5	<5	<5	<5	<5	<5	<5	<5	<0.5	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Bismuth	ug/L	2		-	-	-	-	-	-	-	-	-	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Boron	ug/L	5	5000	14	11	10	12	18	7	7	6	<100	63	41	21	140	93.4	11.8	44.0	78.9	186	18	170	100	162	165	
Cadmium	ug/L	0.017		5	<0.5	<0.5	<0.3	<0.3	<0.3	0.1	0.03	0.03	<0.3	<0.3	ND	ND	0.029	<0.017	<0.017	0.065	<0.3	1	0.512	0.449	<0.017	0.02	
Chromium	ug/L	1		50	2	<2	<2	<2	2	<2	<2	<2	<2	<2	ND	2	<2.0	<2.0	<2.0	<1.0	3	<2	3	<1	<1	4	
Cobalt	ug/L	1		<0.1	<1	1	1	<1	<1	<0.4	<0.4	<0.4	<1	<1	ND	ND	0.5	<0.40	<0.40	<0.40	<1	<1	<1	<1	2	1	
Copper	ug/L	2	1000		<10	6	<2	4	2	21	9	6	5	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Iron	ug/L	50	300		30	18	130	57	80	200	<20	<20	<100	<50	ND	ND	<50	57	<50	<50	<50	<50	<50	<50	<50	3270	83
Lead	ug/L	0.5		10	0.1	0.4	0.4	<0.5	<0.5	1.4	<0.5	<0.5	<1	<0.5	ND	ND	<0.50	<0.50	<0.50	<0.50	1.6	<0.5	<0.5	<0.5	<0.5	<0.5	
Manganese	ug/L	2	50	150	3	16	7	56	32	34	32	7	30	17	19	140	86.2	10.3	60.4	35.8	250	8	283	<2	1410	435	
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	ND	-	-	-	-	-	-	-	-	-	<0.026	<0.026	
Molybdenum	ug/L	2		35	<2	<2	<2	<2	<2	<2	<2	<4	<4	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Nickel	ug/L	2		8	<2	<2	<2	<2	<2	2	<2	<2	<3	3	2	ND	8	7.2	<2.0	3.8	6	10	<2	8	10	11	9
Selenium	ug/L	1		50	<2	<2	<2	<2	<2	<1	<1	<1	<1	<2	<2	ND	ND	<1.0	<1.0	<1.0	<1.0	4	<2	2	<1	<1	10
Silver	ug/L	0.1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<2	<0.5	ND	ND	<0.1	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	
Strontium	ug/L	5		240	140	150	370	180	190	170	160	230	1100	780	440	1500	1310	23.2	632	1180	1510	262	1030	917	1520	1480	
Thallium	ug/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	ND	ND	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Tin	ug/L	2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Titanium	ug/L	2		-	-	-	-	-	-	-	-	-	-	<2	<2	ND	2	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Uranium	ug/L	0.1		20	1	3	2.9	4.3	2.7	3	3	2.8	2.98	9.8	5.9	4.6	15	13	<0.10	4.40	10.6	18.2	3.1	9.5	9.6	14	15.9
Vanadium	ug/L	2		<2	2	2	<2	2	2	<2	<2	<2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	3	<2	2	<2	<2	<2	
Zinc	ug/L	5	5000		<10	18	5	11	6	14	7	6	4	5	<5	ND	ND	12.5	<5.0	23.3	<5.0	<5	8	6	10	6	<5

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table B.15 - MW-27B Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	23-Nov-06	16-Aug-07	28-Jul-10	21-Sep-11	4-Oct-12
Aluminum	ug/L	10	100		120	13.9	27	11	29
Antimony	ug/L	2		6	ND	<2.0	<2	<2	<2
Arsenic	ug/L	2		10	13	12.4	9	13	9
Barium	ug/L	5		1000	ND	<5.0	<5	<5	<5
Beryllium	ug/L	2			ND	<2.0	<2	<2	<2
Bismuth	ug/L	2			ND	<2.0	<2	<2	<2
Boron	ug/L	5		5000	110	122	96	99	158
Cadmium	ug/L	0.3		5	ND	<0.017	<0.3	1.2	0.024
Chromium	ug/L	2		50	ND	<2.0	<2	<2	2
Cobalt	ug/L	1			ND	<0.40	<1	<1	<1
Copper	ug/L	2	1000		ND	<2.0	10	<2	<2
Iron	ug/L	50	300		67	<50	<50	<50	<50
Lead	ug/L	0.5		10	ND	<0.50	<0.5	<0.5	<0.5
Manganese	ug/L	2	50		7	<2.0	<2	<2	<2
Molybdenum	ug/L	2			3	2.5	<2	<2	<2
Nickel	ug/L	2			ND	<2.0	<2	<2	<2
Selenium	ug/L	2		50	ND	<1.0	<2	<2	<1
Silver	ug/L	0.5			ND	<0.10	<0.5	<0.5	<0.1
Strontium	ug/L	5			56	54	61	48	70
Thallium	ug/L	0.1			ND	<0.10	<0.1	<0.1	<0.1
Tin	ug/L	2			ND	<2.0	<2	<2	<2
Titanium	ug/L	2			3	<2.0	<2	<2	<2
Uranium	ug/L	0.1		20	3.8	4.05	2	2.2	3.1
Vanadium	ug/L	2			6	5.3	3.4	6	4
Zinc	ug/L	5	5000		ND	<5.0	<5	11	<5

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table B.16 - MW-27C Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	23-Nov-06	16-Aug-07	28-Jul-10	14-Sep-11	4-Oct-12
Aluminum	ug/L	10	100		ND	17.6	221	-	<5
Antimony	ug/L	2		6	ND	<2.0	<2	<2	<2
Arsenic	ug/L	2		10	16	15.7	5	13	6
Barium	ug/L	5		1000	ND	<5.0	<5	<5	17
Beryllium	ug/L	2			ND	<2.0	<2	<2	<2
Bismuth	ug/L	2			ND	<2.0	<2	<2	<2
Boron	ug/L	5		5000	160	174	181	157	233
Cadmium	ug/L	0.3			5	ND	<0.017	<0.3	1.13
Chromium	ug/L	2		50	2	2.7	<2	2	2
Cobalt	ug/L	1			ND	<0.40	<1	<1	<1
Copper	ug/L	2	1000		ND	<2.0	<2	<2	<2
Iron	ug/L	50	300		ND	<50	278	<50	<50
Lead	ug/L	0.5		10	ND	<0.50	0.7	<0.5	<0.5
Manganese	ug/L	2	50		ND	12	9	5	72
Molybdenum	ug/L	2			ND	<2.0	6	<2	<2
Nickel	ug/L	2			ND	<2.0	9	<2	<2
Selenium	ug/L	2		50	ND	<1.0	2	<1	<1
Silver	ug/L	0.5			ND	<0.10	<0.5	<0.1	<0.1
Strontium	ug/L	5			46	45.8	58	41	48
Thallium	ug/L	0.1			ND	<0.10	<0.1	<0.1	<0.1
Tin	ug/L	2			ND	<2.0	<2	<2	<2
Titanium	ug/L	2			ND	<2.0	2	<2	<2
Uranium	ug/L	0.1		20	6.2	7.14	<0.1	6.2	6.1
Vanadium	ug/L	2			7	6.8	5	6	3
Zinc	ug/L	5	5000		ND	<5.0	90	7	<5

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table B.17 - MW-29B Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	20-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	19-Aug-03 LAB DUP	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	
Aluminum	ug/L	5	100		94	340	400	1600	50	3500	26	30	20	20	<10	22	ND	12.2	18.2	42.1	35	<10	<5	16	8	8	
Antimony	ug/L	2		6	14	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2		
Arsenic	ug/L	2		10	4	2	2	2	< 2	4	2	1.7	2	2	2	2	2.4	2.0	2.1	2	2	<2	<2	2	2		
Barium	ug/L	5		1000	< 2	28	9	61	45	140	10	7.4	8	8	10	9.6	15	15.5	9.8	32	22	10	18	11	13	11	
Beryllium	ug/L	2			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 0.5	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2		
Bismuth	ug/L	2			-	-	-	-	-	-	-	-	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2		
Boron	ug/L	5		5000	12	19	14	18	10	12	9	<100	7	6	7	7.5	9	13.4	6.4	6.1	5	6	14	7	7	6	
Cadmium	ug/L	0.017		5	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	0.1	0.09	< 0.3	< 0.3	< 0.3	ND	ND	<0.017	0.254	0.363	1	< 0.3	0.019	<0.017	0.239	<0.017		
Chromium	ug/L	1		50	< 2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	ND	ND	<2.0	<2.0	<1.0	<2	<2	<1	<1	<1	<1		
Cobalt	ug/L	1			< 1	< 1	< 1	< 1	< 1	2	< 0.4	< 1	< 1	< 1	ND	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1		
Copper	ug/L	2		1000		< 10	16	2	7	6	13	< 2	< 2	< 2	2	< 2	ND	ND	2.2	<2.0	<2.0	2	<2	<2	<2	<2	<2
Iron	ug/L	50	300		80	200	210	670	< 20	840	< 20	< 100	< 50	< 50	ND	ND	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	
Lead	ug/L	0.5		10	0.7	1.3	3.6	15	0.6	20	< 0.5	< 1	< 0.5	< 0.5	ND	ND	<0.50	<0.50	2.73	1.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Manganese	ug/L	2		50	< 10	51	15	170	42	1400	7	7	4	2	2	7.3	120	3.6	5.4	855	334	3	32	<2	<2	<2	
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	ND	ND	-	-	-	-	-	-	<0.026	<0.026	<0.026		
Molybdenum	ug/L	2			7	4	3	2	5	2	3	< 4	2	2	2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Nickel	ug/L	2			< 2	3	2	2	< 2	2	< 2	< 3	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2		
Selenium	ug/L	1		50	< 2	< 2	< 2	< 2	< 2	< 1	< 1	< 1	< 2	< 2	ND	ND	<1.0	<1.0	<1.0	<2	<1	<1	<1	<1	<1		
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	< 2	< 0.5	< 0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1		
Strontium	ug/L	5			99	150	210	330	250	680	290	279	280	340	280	309	316	316	282	338	335	300	300	296			
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.8	< 0.1	< 0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Tin	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 20	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Titanium	ug/L	2			-	-	-	-	-	-	-	-	-	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Uranium	ug/L	0.1		20	1.1	2.7	4.1	6.8	1.8	4.4	2.6	2.47	0.5	0.5	3.5	1.8	2.0	0.99	1.76	1.72	1.6	1.8	1.9	2.1	2.1	1.9	
Vanadium	ug/L	2			< 2	2	< 2	6	< 2	8	< 2	< 2	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2		
Zinc	ug/L	5	5000		< 10	46	9	20	13	44	13	3	5	6	< 5	ND	ND	22.8	15.1	40.3	9	< 5	7	6	5		

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective

Starting in 2010 Grey indicates exceedance in maximum allowable concentration

Table B.18 - MW-29C Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	20-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	
Aluminum	ug/L	5	100		210	180	110	140	40	550	48	50	30	50	62	120	11	7.5	66.6	<10	-	<5	15	11	<5	
Antimony	ug/L	2		6	6	< 2	< 2	< 2	< 2	< 2	<0.4	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2	
Arsenic	ug/L	2		10	7	4	5	5	5	5	4	3.4	5	5	5.9	6	4.5	4.9	4.5	5	4	6	4	5	6	
Barium	ug/L	5		1000	< 2	9	< 5	< 5	20	14	<5	4.3	< 5	< 5	ND	ND	<5.0	<5.0	<5.0	<5	<5	<5	<5	<5	<5	
Beryllium	ug/L	2			< 5	< 5	< 5	< 5	< 5	< 5	<0.5	< 5	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Bismuth	ug/L	2			-	-	-	-	-	-	-	-	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Boron	ug/L	5		5000	32	12	7	10	11	12	9	<100	10	19	19	21	11.6	16.0	15.0	15	23	35	18	22	19	
Cadmium	ug/L	0.017		5	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 0.1	0.06	< 0.3	< 0.3	< 0.3	ND	ND	<0.017	0.068	0.02	0.4	0.087	0.205	<0.017	<0.017	<0.017	
Chromium	ug/L	1		50	< 2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	ND	ND	<2.0	<2.0	<1.0	<2	<1	<1	<1	<1	<1	
Cobalt	ug/L	1			< 1	< 1	1	< 1	< 1	< 1	<0.4	< 1	< 1	< 1	ND	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	
Copper	ug/L	2		1000	< 10	11	2	3	4	4	< 2	< 2	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	2	<2	<2	
Iron	ug/L	50	300		160	100	100	190	< 50	170	20	<100	< 50	70	68	130	<50	<50	<50	<50	<50	<50	<50	<50	<50	
Lead	ug/L	0.5		10	0.9	1.1	0.4	0.5	0.8	1.9	<0.5	< 1	< 0.5	< 0.5	ND	ND	<0.50	<0.50	<0.50	2.2	<0.5	<0.5	<0.5	<0.5	<0.5	
Manganese	ug/L	2	50		< 10	8	8	7	41	28	2	4	4	2	4.3	4	6.2	2.0	3.6	4	<2	<2	<2	<2	<2	<2
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	
Molybdenum	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 4	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Nickel	ug/L	2			< 2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 3	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Selenium	ug/L	1		50	< 2	< 2	< 2	< 2	< 2	< 2	< 1	< 1	< 1	< 2	ND	ND	<1.0	<1.0	<1.0	<2	<1	<1	<1	<1	<1	
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	>0.1	< 2	< 0.5	< 0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	
Strontium	ug/L	5			99	120	140	130	120	160	140	113	150	82	110	87	154	102	107	135	127	100	125	91	95	
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1	< 0.8	0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Tin	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 20	< 2	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Titanium	ug/L	2			-	-	-	-	-	-	-	-	-	2	6	3.1	9	<2.0	<2.0	3	<2	<2	<2	<2	<2	<2
Uranium	ug/L	0.1		20	1.3	1.3	0.8	1	1	1	0.9	0.89	0.9	0.8	1	0.9	0.87	0.91	0.85	0.9	0.9	0.9	0.9	0.9	0.9	
Vanadium	ug/L	2			< 2	5	6	6	5	7	6	5	6	6	6.6	7	5.6	5.6	5.1	5	5	6	6	5	5	
Zinc	ug/L	5	5000		< 10	31	7	9	14	10	3	< 2	< 5	< 5	ND	ND	12	9.7	<5.0	11	<5	<5	<5	<5	<5	

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table B.19 - MW-31A Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	21-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	21-Jul-15
Aluminum	ug/L	5	100		8	140	110	12	30	1000	160	60	**	20	47	10	14.5	7.8	9.4	<10		14	22	10	10
Antimony	ug/L	2		6	7	< 2	< 2	< 2	< 2	< 2	< 2	< 0.4	**	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2
Arsenic	ug/L	2		10	< 2	< 2	< 2	< 2	< 2	2	< 2	1.2	**	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2
Barium	ug/L	5		1000	9	14	< 5	< 5	19	49	17	14	**	8	8.7	32	8.2	8.0	6.2	<5	5	31	10	8	8
Beryllium	ug/L	2			< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 0.5	**	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Bismuth	ug/L	2		-	-	-	-	-	-	-	-	-	**	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Boron	ug/L	5		5000	< 2	< 2	< 5	< 5	< 5	< 10	< 5	<100	**	<5	ND	ND	<5.0	<5.0	<5.0	<5	52	<5	<5	<5	<5
Cadmium	ug/L	0.017		5	< 1	< 0.5	< 0.3	< 0.3	< 0.3	< 0.1	0.07	<0.3	**	<0.3	ND	ND	0.034	<0.017	0.073	<0.3	<0.017	0.184	0.055	<0.017	<0.017
Chromium	ug/L	1		50	< 10	2	< 2	< 2	< 2	< 2	< 2	< 2	**	<2	ND	ND	<2.0	<2.0	<1.0	<2	<1	<1	<1	<1	<1
Cobalt	ug/L	1			< 1	< 1	1	< 1	< 1	1	0.9	<1	**	1	1	2	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1
Copper	ug/L	2		1000	< 10	13	< 2	3	5	2	2	<2	**	<2	ND	ND	2.6	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Iron	ug/L	50	300		20	120	60	< 20	< 50	400	270	1290	**	<50	ND	ND	92	<50	310	141	315	459	<50	171	199
Lead	ug/L	0.5		10	< 0.1	1.9	0.1	< 0.5	0.5	2	0.5	<1	**	<0.5	ND	ND	<0.50	<0.50	<0.50	1.3	<0.5	<0.5	<0.5	<0.5	<0.5
Manganese	ug/L	2	50		50	340	14	3	16	190	310	195	**	210	240	480	49.2	16.5	70.4	29	59	99	<2	30	45
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	**	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	
Molybdenum	ug/L	2			< 2	2	< 2	< 2	< 2	< 2	< 2	< 4	**	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Nickel	ug/L	2			< 2	3	< 2	< 2	< 2	2	< 2	<3	**	<2	ND	ND	<2.0	<2.0	<2.0	2	<2	<2	<2	<2	<2
Selenium	ug/L	1		50	< 2	< 2	< 2	< 2	< 2	< 2	< 1	<1	**	<2	ND	ND	<1.0	<1.0	<1.0	<2	<1	<1	<1	<1	
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.1	<2	**	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.1	<0.1	
Strontium	ug/L	5		43	31	11	8	26	29	19	23	**	21	14	50	23.3	11.4	14.6	14	15	56	22	16	21	
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.8	**	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	
Tin	ug/L	2			< 2	< 2	< 2	< 2	< 2	< 2	< 2	<20	**	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	
Titanium	ug/L	2			-	-	-	-	-	-	-	-	**	<2	2.5	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	
Uranium	ug/L	0.1		20	-	0.4	< 0.1	< 0.1	< 0.1	1	0.1	<0.15	**	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	
Vanadium	ug/L	2			< 2	< 2	< 2	< 2	< 2	2	< 2	<2	**	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	
Zinc	ug/L	5	5000		< 10	37	1100	45	15	6	20	6	**	<5	ND	ND	48.1	24.5	<5.0	<5	<5	8	<5	<5	

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table B.20 - TH-1 Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	19-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	25-Aug-04 Lab DUP	16-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	28-Jul-08 Dup-B	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	20-Aug-14	22-Jul-15
Aluminum	ug/L	5	100		5	70	< 10	< 10	< 10	130	<50	<20	< 10	<100	ND	ND	<5.0	<5.0	<5.0	<10	<10	<5	37	5	<5		
Antimony	ug/L	2		6	4	< 2	< 2	< 2	< 2	< 20	<20	<0.4	< 2	<20	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2		
Arsenic	ug/L	2		10	43	26	34	8	27	30	22.6	10	<20	<20	11	4	35.9	49.7	43.1	36	35	25	10	28	33	21	
Barium	ug/L	5		1000	3800	3300	3400	2800	2800	3100	3100	2460	2000	1600	1700	1400	1200	1500	1400	1400	1370	1030	1210	1090	1030	1170	1130
Beryllium	ug/L	2			< 5	< 5	< 5	< 5	< 5	< 50	<50	<0.5	< 2	<20	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2	
Bismuth	ug/L	2			-	-	-	-	-	-	-	<2	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2	
Boron	ug/L	5		5000	1200	1000	950	1000	920	900	870	650	610	630	670	500	450	351	344	350	323	363	254	365	2210	244	240
Cadmium	ug/L	0.017		5	0.5	1	< 0.3	< 0.3	< 0.3	< 1	0.1	<0.3	< 0.3	<3	<3	ND	ND	<0.017	0.059	0.047	0.089	<0.3	1	<0.017	<0.017	<0.017	0.023
Chromium	ug/L	1		50	7	5	5	4	7	< 20	<20	<2	3	<20	<20	3.3	3	<2.0	3.4	2.2	1.7	<2	<2	1	7	<1	1
Cobalt	ug/L	1			21	17	18	14	14	12	16	10	16	12	13	9.9	16	7.89	11.2	10.7	8.29	4	5	4	6	6	4
Copper	ug/L	2	1000		< 10	7	< 2	2	< 2	< 20	<20	15	< 2	<20	<20	ND	ND	<2.0	4.1	2.1	<2.0	<2	<2	<2	<2	<2	<2
Iron	ug/L	50	300		25300	13000	23000	120	13000	23000	26000	15200	80	<500	<500	1700	78	14100	12100	11900	11600	8630	9710	<50	11800	10400	14000
Lead	ug/L	0.5		10	0.3	1	0.2	< 0.5	< 0.5	< 5	<5	< 1	< 0.5	< 5	<5	ND	ND	<0.50	<0.50	<0.50	<0.50	1.2	<0.5	<0.5	<0.5	<0.5	<0.5
Manganese	ug/L	2	50		1740	1400	1600	1400	1300	1500	1500	1280	1100	990	1000	950	750	855	774	759	841	774	1030	1000	913	914	1200
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	
Molybdenum	ug/L	2			2	2	2	< 2	< 2	< 20	<20	<4	2	<20	<20	ND	4	<2.0	4.9	4.8	<2.0	<2	<2	<2	<2	<2	<2
Nickel	ug/L	2			41	29	33	21	18	< 20	21	16	25	<20	<20	15	25	10.8	21.8	20.3	8.9	6	5	5	9	5	4
Selenium	ug/L	1	50		< 2	< 2	< 2	< 2	< 2	< 10	<10	2	< 2	<20	<20	ND	ND	<1.0	<1.0	<1.0	<1.0	<2	<2	1	<1	<1	4
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	< 5	< 1	< 2	< 0.5	< 5	ND	ND	<0.10	<0.10	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1
Strontium	ug/L	5			920	790	840	800	770	860	840	873	690	570	590	520	470	439	429	415	425	430	434	413	384	376	400
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 1	< 0.8	< 0.1	< 1	< 1	ND	ND	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	
Tin	ug/L	2			3	3	2	2	2	< 20	<20	<20	2	<20	<20	ND	3	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Titanium	ug/L	2			-	-	-	-	-	-	-	-	<2	<20	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2
Uranium	ug/L	0.1	20	0.5	1	0.4	0.2	0.2	0.2	< 1	< 1	0.18	0.2	< 1	< 1	0.1	0.5	<0.10	0.15	0.13	<0.10	0.2	0.2	<0.1	<0.1	<0.1	<0.1
Vanadium	ug/L	2			2	2	3	< 2	< 2	< 20	<20	4	< 2	<20	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	3	3	<2	<2	<2	<2
Zinc	ug/L	5	5000		180	44	12	6	9	27	<20	7	7	<50	<50	ND	ND	27.6	6.4	17.6	<5.0	8	<5	6	15	<5	<5

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table B.21 - TH-2 Groundwater Metals Chemistry

Compound	Units	RDL*	AO	MAC	Sep-93	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	20-Aug-14	22-Jul-15
Aluminum	ug/L	5	100		5	56	160	< 100	350	1500	24900	10	20	93	66	552	52.4	<5.0	<10	<10	<5	45	29	14
Antimony	ug/L	2		6	40	< 2	< 2	< 20	< 2	< 2	<0.4	< 2	< 2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2
Arsenic	ug/L	2		10	3	2	< 2	< 20	< 2	4	1.6	< 2	< 2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	
Barium	ug/L	5		1000	< 5	9	13	100	29	73	16	< 5	< 5	ND	6	<5.0	<5.0	<5.0	<5	<5	<5	13	<5	<5
Beryllium	ug/L	2			< 5	< 5	< 5	< 50	< 5	< 5	0.5	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	
Bismuth	ug/L	2			-	-	-	-	-	-	-	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	
Boron	ug/L	5		5000	40	12	14	54	16	11	<100	10	10	13	13	11.8	9.3	8.4	11	9	20	37	12	15
Cadmium	ug/L	0.017		5	< 0.5	< 0.3	0.4	< 3	0.4	0.3	<0.3	< 0.3	< 0.3	ND	ND	0.021	0.136	0.186	<0.3	<0.3	<0.017	0.028	<0.017	<0.017
Chromium	ug/L	1		50	< 2	< 2	< 2	< 20	< 2	< 2	< 2	< 2	< 2	ND	ND	<2.0	<2.0	<1.0	<2	<2	<1	<1	<1	<1
Cobalt	ug/L	1			< 1	2	1	< 10	1	3.3	< 1	< 1	< 1	ND	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1
Copper	ug/L	2	1000		< 10	2	5	< 20	< 2	7	10	< 2	< 2	ND	ND	<2.0	2.5	<2.0	<2	<2	<2	<2	<2	<2
Iron	ug/L	50	300		1990	1800	1400	370	3400	20000	11800	< 50	< 50	78	ND	329	100	< 50	522	< 50	< 50	92	449	317
Lead	ug/L	0.5		10	< 0.5	0.8	3.3	< 5	6.6	33	10	< 0.5	< 0.5	ND	ND	0.7	< 0.50	< 0.50	0.5	< 0.5	< 0.5	0.6	0.8	< 0.5
Manganese	ug/L	2	50	460	140	100	71	220	460	108	59	62	31	98	11	6.2	104	84	9	12	<2	48	39	
Mercury	ug/L	0.026		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.14	< 0.026	< 0.026	
Molybdenum	ug/L	2			< 2	< 2	< 2	< 20	< 2	< 2	< 4	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	
Nickel	ug/L	2			4	< 2	2	< 20	< 2	3	< 3	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	
Selenium	ug/L	1		50	< 2	< 2	< 2	< 20	< 1	< 1	< 1	< 2	< 2	ND	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	
Silver	ug/L	0.1			< 0.5	< 0.5	< 0.5	< 5	< 0.5	0.2	< 2	< 0.5	< 0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	
Strontium	ug/L	5		360	110	120	78	180	310	96	110	110	50	110	35.6	7.7	114	122	24	42	<5	82	76	
Thallium	ug/L	0.1			< 0.1	< 0.1	< 0.1	< 1	< 0.1	0.1	< 0.8	< 0.1	< 0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	
Tin	ug/L	2			< 2	< 2	< 2	< 20	< 2	< 2	< 20	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	
Titanium	ug/L	2			-	-	-	-	-	-	-	-	-	ND	ND	3.8	<2.0	<2.0	<2	<2	<2	<2	<2	
Uranium	ug/L	0.1		20	0.1	< 0.1	0.2	< 1	0.3	3.6	2.02	< 0.1	< 0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	
Vanadium	ug/L	2				< 2	< 2	< 20	< 2	2	3	< 2	< 2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	
Zinc	ug/L	5	5000		< 10	48	18	< 50	7	38	12	5	< 5	ND	ND	17.9	24.9	< 5.0	< 5	< 5	11	7	< 5	

Notes:

RDL - Reported Detection Limit (updated in 2015)

ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Starting in 2010 Grey indicates exceedance in maximum allowable concentration.

Table C.1 - MW-4A Volatile Organic Compounds EPA 624

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	Sep-02 40D dup 4A	19-Aug-03	25-Aug-04	25-Aug-04 MW-40D	25-Aug-04 MW-40D Lab Dup	18-Aug-05	18-Aug-05 MW-40D	23-Nov-06	16-Aug-07	16-Aug-07 MW-4ALF	28-Jul-08	28-Jul-08 Dup-A	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	4-Jul-13 MW-40D	19-Aug-14	19-Aug-14 MW-40D	21-Jul-15	21-Jul-15 MW-40D
1,1-Dichloroethane	ug/L	1			-	-	-	2.33	1.6	2	2	2.5	2.1	0.7	2.4	<2	<2	<2	ND	ND	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1-Dichloroethylene	ug/L	0.6		14	-	-	-	-	-	<2	<2	<0.5	<0.5	<0.5	<2	<2	<2	<2	ND	ND	<2	<2	<2	<0.66	<0.66	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6		
1,1,1-Trichloroethane	ug/L	1			-	-	-	-	-	<1	<1	<0.5	<0.5	<0.5	<1	<1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1				
1,1,2-Trichloroethane	ug/L	1			-	-	-	-	-	<1	<1	<0.5	<0.5	<0.5	<1	<1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1				
1,1,2-Trichloroethene	ug/L	-			-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	ND	ND	-	-	-	<1	ND	-	-	-	-	-	-				
1,1,1,2-Tetrachloroethane	ug/L	0.5			-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	ND	ND	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5				
1,1,2,2-Tetrachloroethane	ug/L	1			-	-	-	-	-	<1	<1	<1	<1	<1	<8	<1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1				
1,1,2,2-Tetrachloroethene	ug/L	-			-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	ND	ND	-	-	-	-	ND	-	-	-	-	-				
1,2-Dibromoethane	ug/L	0.2		n.a.	-	-	-	-	-	<1	<1	n.a.	n.a.	n.a.	<1	<1	<1	ND	ND	-	-	-	-	<1	<1	<0.25	<0.25	<0.2	<0.2	<0.2				
1,2-Dichlorobenzene	ug/L	0.7	3	200	n.a.	1.3	1.5	2.57	3.4	2	<1	1.4	1.4	0.6	<1	<0.5	1.5	1.4	1.4	1.3	1.1	1.4	1.3	1.3	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7				
1,2-Dichloroethane	ug/L	2		5	-	-	-	-	-	<1	<1	<0.5	<0.5	<0.5	<1	<1	<1	ND	ND	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2				
1,2-Dichloropropane	ug/L	0.7			-	-	-	-	-	<1	<1	<0.5	<0.5	<0.5	<1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.7	<0.7	<0.7			
1,2-Dichloroethene	ug/L	-		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.					
1,3-Dichlorobenzene	ug/L	1		n.a.	-	-	-	-	-	<1	<1	<0.5	<0.5	<0.5	6.2	<1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			
1,4-Dichlorobenzene	ug/L	1	1	5	n.a.	-	-	1.87	1.6	1	<1	2.3	4	0.8	<1	<1	4.5	4.5	4.4	4.6	4	7	7	6	5	<1	4	5	4	3	4	5		
1,4-Dichlorobutane	ug/L	-		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
1-Chloro-2-Bromopropane	ug/L	-		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
2,4-Chlorotoluene	ug/L	-		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
2-Chloroethylvinyl ether	ug/L	-		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	<8	<8	<8	ND	ND	-	-	-	-	-	-	-	-	-	-	-				
Benzene	ug/L	1		5	8.8	-	1.1	2.99	2.57	3	2.7	3	2.7	<0.5	5.1	1.4	4.5	4.2	3.1	3.1	2	4	4	3	3	2	2	<1	3	3	1.93	2	2	2
Bromochloromethane	ug/L	-		16	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Bromodichloromethane	ug/L	1		100	-	-	-	-	-	-	<1	<1	<0.2	<0.2	<0.2	<1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			
Bromoform	ug/L	1		100	-	-	-	-	-	-	<1	>1	>0.2	<0.2	<0.2	<1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			
Bromomethane	ug/L	0.89		n.a.	-	-	-	-	-	-	<8	20	<3	<3	<8	<8	<8	ND	ND	<8	<8	<8	<8	<8	<3.7	<3.7	<3	<3	<0.89	<0.89	<0.89			
Carbon Tetrachloride	ug/L	0.56		2	9.9	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<0.79	<0.79	<0.56	<0.56	<0.56	<0.56			
Chlorobenzene	ug/L	1	30	80	-	-	-	-	-	4.6	5.9	7	7.2	10	10	2.2	<1	2	11	11	9.9	10	8	9	9	9	8	1	5	9	8	5	6	7
Chloroethane	ug/L	5		n.a.	-	-	-	-	-	<8	<8	<1	<1	<8	<8	<8	<8	ND	ND	<8	<8	<8	<8	<5	<5	<5	<5	<5	<5	<5	<5			
Chloroform	ug/L	1		100	-	-	-	-	-	<1	<1	<0.2	<0.2	<0.2	<1	<1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			
Chloromethane	ug/L	1		n.a.	47.8	6.8	-	-	-	<8	<8	<2	<2	<2	<1	<1	<8	<8	ND	ND	<8	<8	<8	<8	<1	<1	<1	<1	<1	<1	<1			
cis	1,2-Dichloroethene	ug/L	-	-	n.a.	n.a.	-	-	-	<2</																								

Table C.2 - MW-12B Volatile Organic Compounds EPA 624

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	
1,1 - Dichloroethane	ug/L	1			2.3	-	-	1.57	-	-	< 2	<2	<0.4	< 2	<2	ND	ND	<2	<2	<1	<1	<1	<1	<1	<1	
1,1 - Dichloroethylene	ug/L	0.6		14	-	-	-	-	-	-	< 2	<2	<0.5	< 2	<2	ND	ND	<2	<2	<0.66	<0.66	<0.6	<0.6	<0.6	<0.6	
1,1,1 - Trichloroethane	ug/L	1			-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,2 - Trichloroethane	ug/L	1			-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,2 - Trichloroethene	ug/L	-									< 1	<1	<0.5	< 1	<1	ND	ND	-	-	<1		-	-	-	-	
1,1,1,2-Tetrachloroethane	ug/L	0.5			-	-	-	-	-	-	< 1	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	ug/L	1			-	-	-	-	-	-	< 1	<1	<1	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,2,2-Tetrachloroethene	ug/L	-									< 1	<1	<0.5	< 1	<1	ND	ND	-	-	-	-	-	-	-	-	
1,2 - Dibromoethane	ug/L	0.2			n.a.	-	-	-	-	-	< 1	<1	n.a.	-	<1	-	-	-	-	<1	<1	<1	<0.25	<0.2	<0.2	
1,2 - Dichlorobenzene	ug/L	0.7	3	200	n.a.	-	-	-	-	-	< 1	<1	<0.5	< 1	<0.5	ND	ND	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	
1,2 - Dichloroethane	ug/L	2		5	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	
1,2 - Dichloropropane	ug/L	0.7			-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.7	<0.7	
1,2-Dichloroethene	ug/L	-			n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	-	-	<1	<2	-	-	-	-	
1,3 - Dichlorobenzene	ug/L	1			n.a.	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
1,4 - Dichlorobenzene	ug/L	1	1	5	n.a.	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
1,4 Dichlorobutane	ug/L	-			n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	-	-	-	-	-	-	-	-	
1-Chloro 2-Bromopropane	ug/L	-			n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	
2,4 Chlorotoluene	ug/L	-			n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 0.5	-	-	-	-	-	-	-	-	-	-	
2-Chloroethylvinyl ether	ug/L	-			n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	<1	-	-	-	-	-	-	
Benzene	ug/L	1		5	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Bromochloromethane	ug/L	-		16	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	
Bromodichloromethane	ug/L	1		100	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Bromoform	ug/L	1		100	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Bromomethane	ug/L	0.89			n.a.	-	-	-	-	-	< 8	<8	<3	< 8	<8	ND	ND	<8	<8	<1	<3.7	<1	<1	<1	<0.89	<0.89
Carbon Tetrachloride	ug/L	0.56		2	-	-	-	-	-	-	< 1	<1	<1	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.79	<0.56	<0.56
Chlorobenzene	ug/L	1	30	80	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Chloroethane	ug/L	5			n.a.	-	-	-	-	-	< 8	<8	<1	< 8	<8	ND	ND	<8	<8	<1	<5	<5	<5	<5	<5	
Chloroform	ug/L	1		100	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Chloromethane	ug/L	1			n.a.	-	-	-	-	-	< 8	<8	<2	< 1	<8	ND	ND	<8	<8	<2	<1	<1	<1	<1	<1	
cis-1,2-Dichloroethene	ug/L	-			n.a.	n.a.	-	-	-	-	< 2	<2	<1	< 2	<2	ND	ND	-	-	-	-	-	-	-	-	
cis-1,2-Dichloroethylene	ug/L	1.6														ND	<2	<2	<2	<2	<1.6	<1.6	<1.6	<1.6	<1.6	
cis-1,3-Dichloroethene	ug/L	-			n.a.	-	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	<1	-	-	-	-	-	-	-
cis 1,3-Dichloropropene	ug/L	0.5			-	-	-	-	-	-	< 2	<2	<0.14			ND	<2	<2	<2	<2	<2	<0.5	<0.5	<0.5		
Dibromochloromethane	ug/L	1		100	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<5	<1	<1	<1	<1	<1	
Dibromoethene	ug/L	-														-	-	-	-	-	-	-	-	-	-	
Dichlormethane	ug/L	-		50	-	-	-	-	-	-	< 3	<3	<1	< 3	<3	ND	ND	-	-	<2	-	-	-	-	-	
Ethylbenzene	ug/L	2	1.6	140	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	
Ethylene Dibromide	ug/L	-			n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	ND	<1	<1	-	-	-	-	-	-	-	
iso- Propylbenzene (Cumene)	ug/L	-			n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	<2	-	-	-	-	-			

Table C.3 - MW-22A Volatile Organic Compounds EPA 624

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
1,1 - Dichloroethane	ug/L	1		n.a.	-	1.3	1.77	2	2	<2	1.1	<2	<2	-	ND	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1
1,1 - Dichloroethylene	ug/L	0.6		14	-	-	-	-	-	<2	<2	<0.5	<2	<2	ND	ND	<2	<2	<0.66	<0.66	<0.6	<0.6	<0.6	<0.6	
1,1,1 - Trichloroethane	ug/L	1		-	-	-	-	-	-	<1	<1	<5	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,2 - Trichloroethane	ug/L	1		-	-	-	-	-	-	<1	<1	<0.5	<1	<1	ND	ND	-	<1	<1	<1	<1	<1	<1	<1	
1,1,2-Trichloroethene	ug/L	-		-	-	-	-	-	-	-	-	-	-	ND	ND	<1	<1	-	-	-	-	-	-	-	
1,1,1,2-Tetrachloroethane	ug/L	0.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	
1,1,2,2-Tetrachloroethane	ug/L	1		-	-	-	-	-	-	<1	<1	<1	<8	<1	ND	ND	<1	-	<1	<1	<1	<1	<1	<1	
1,1,2,2-Tetrachloroethene	ug/L	-		-	-	-	-	-	-	<1	<1	<0.5	<1	<1	ND	ND	-	-	-	-	-	-	-	-	
1,2 - Dibromoethane	ug/L	0.2		n.a.	-	-	-	-	-	<1	<1	n.a.	-	-	-	-	-	-	<1	<1	<1	<0.25	<0.2	<0.2	
1,2 - Dichlorobenzene	ug/L	0.7	3	200	n.a.	-	-	-	-	-	<1	<1	<0.5	<1	<0.5	ND	ND	<0.5	<0.5	<0.7	<0.7	<0.7	1.1	<0.7	
1,2 - Dichloroethane	ug/L	2		5	-	-	-	-	-	<1	<1	<5	<1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	
1,2 - Dichloropropane	ug/L	0.7		-	-	-	-	-	-	<1	<1	<0.5	<1	<1	ND	ND	<1	<1	<1	<1	<1	<0.7	<0.7	<0.7	
1,2-Dichloroethene	ug/L	-		n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	<2	-	-	-	-	-	-	-	-	-	-	-	
1,3 - Dichlorobenzene	ug/L	1		n.a.	-	-	-	-	-	<1	<1	<0.5	<1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	
1,4 - Dichlorobenzene	ug/L	1	1	5	n.a.	-	-	1.23	-	2	1	2.4	1.6	<1	1.7	ND	1	1	2	<1	<1	2	2	<1	1
1,4 Dichlorobutane	ug/L	-		n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	<1	-	-	-	-	-	-	-	-	-	-	-	
1-Chloro 2-Bromopropane	ug/L	-		n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	<1	-	-	-	-	-	-	-	-	-	-	-	
2,4 Chlorotoluene	ug/L	-		n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	<0.5	-	-	-	-	-	-	-	-	-	-	-	
2-Chloroethylvinyl ether	ug/L	-		n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	
Benzene	ug/L	1	5	-	-	3.7	4.39	4.92	6	4.2	4.2	3.2	<1	3.8	1.7	3	2	2	<1	<1	2	3	<1	1	
Bromochloromethane	ug/L	-	16	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	<1	-	-	-	-	-	-	<1	-	-	-	-	-	
Bromodichloromethane	ug/L	1	100	-	-	-	-	-	-	<1	<1	<0.2	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Bromoform	ug/L	1	100	-	-	-	-	-	-	<1	<1	<0.2	-	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Bromomethane	ug/L	0.89		n.a.	-	-	-	-	-	<8	10	<3	<8	<8	ND	ND	<8	<8	<3.7	<3.7	<3	<3	<0.89	<0.89	
Carbon Tetrachloride	ug/L	0.56	2	-	-	-	-	-	-	<1	<1	<1	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.79	<0.56	
Chlorobenzene	ug/L	1	30	80	-	-	-	1.09	-	2	1.7	6.6	3	<1	3.6	3.5	2	3	<1	<1	<1	2	2	4	
Chloroethane	ug/L	5		n.a.	-	8.7	-	-	-	<8	<8	<1	<8	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	
Chloroform	ug/L	1	100	-	-	-	-	-	-	<1	<1	<0.2	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Chloromethane	ug/L	1		n.a.	-	-	-	-	-	<8	<8	<2	<1	<8	ND	ND	<8	<8	<1	<1	<1	<1	<1	<1	
cis-1,2-Dichloroethene	ug/L	-		n.a.	n.a.	n.a.	-	-	-	<2	<2	<1	-	<2	ND	ND	-	<2	-	-	-	-	-	-	
cis-1,2-Dichloroethylene	ug/L	1.6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	<2	<1.6	<1.6	<1.6		
cis-1,3-Dichloroethene	ug/L	-		n.a.	-	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-		
cis-1,3-Dichloropropene	ug/L	0.5		-	-	-	-	-	-	<2	<2	<0.14	-	<2	ND	ND	<2	<2	<2	<2	<2	<2	<0.5	<0.5	
Dibromochloromethane	ug/L	1	100	-	-	-	-	-	-	<1	<1	<0.2	<1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Dibromoethene	ug/L	-		-	-	-	-	-	-	-	-	-	-	-	ND	ND	-	-	-	-	-	-	-		
Dichloromethane	ug/L	-	50	-	-	-	-	-	-	<3	<3	<1	<3	<3	ND	ND	-	-	-	-	-	-	-		
Ethylbenzene	ug/L	2	1.6	140	-	-	5.2	5.68	9.3	12	1.5	<1	<0.5	<1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	
Ethylene Dibromide	ug/L	-		-	-	-	-	-	-	-	-	-	-	-	ND	ND	<1	<1	-	-	-	-	-		
iso- Propylbenzene (Cumene)	ug/L	-		n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-		
Methylene Chloride (Dichloromethane)	ug/L	2	50	-	-	-	-	-	-	-	-	-	-	-	ND	<3	<3	<2	3	<2	<2	<2	<2		
m+p-Xylenes	ug/L	4	300	-	16.2	11	8.45	8.6	20	3.8	13	5.8	<1	2.1	ND										

Table C.4 - MW-22B Volatile Organic Compounds EPA 624

Compound	Units	RDL	AO	MAC	Sep-93	20-Dec-94	8-Mar-95	20-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	
1,1 - Dichloroethane	ug/L	1			-	2.9	-	-	5.12	6	3	4.7	3	1.6	2.8	3.6	2.8	2	2	2	2	<1	<1	1	1		
1,1 - Dichloroethylene	ug/L	0.6		14	-	-	-	-	-	-	< 2	<2	<0.5	<2	<2	ND	ND	<2	<2	2			<0.6	<0.6	<0.6		
1,1,1 - Trichloroethane	ug/L	1			-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1		
1,1,2 - Trichloroethane	ug/L	1			-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1		
1,1,2-Trichloroethene	ug/L	-			-	-	-	-	-	-	<1	<1	<0.5	< 1	<1	ND	ND	-	<1			-	-	-	-		
1,1,1,2-Tetrachloroethane	ug/L	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5		
1,1,2,2-Tetrachloroethane	ug/L	1			-	-	-	-	-	-	-	< 1	<1	<1	< 8	<1	ND	ND	<1	-	<1	<1	<1	<1	<1	<1	
1,1,2,2-Tetrachloroethene	ug/L	-													<1	ND	ND	-	-	-	-	-	-	-	-	-	-
1,2 - Dibromoethane	ug/L	0.2			n.a.	-	-	-	-	-	-	< 1	<1	n.a.	<1				-	<1	<2	<1	<0.25	<0.2	<0.2	<0.2	
1,2 - Dichlorobenzene	ug/L	0.7	3	200	n.a.	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<0.5	ND	ND	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	
1,2 - Dichloroethane	ug/L	2		5	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	
1,2 - Dichloropropane	ug/L	0.7			-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.7	<0.7	
1,2-Dichloroethene	ug/L	-			n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 2					-				-	-	-	-	-
1,3 - Dichlorobenzene	ug/L	1			n.a.	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1		
1,4 - Dichlorobenzene	ug/L	1	1	5	n.a.	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	1	1	2	<1	2		
1,4 Dichlorobutane	ug/L	-			n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-	
1-Chloro 2-Bromopropane	ug/L	-			n.a.	-	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	1	-	-	-	-	-	-	-	-	-	-	-	-	
2,4 Chlorotoluene	ug/L	-			n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 0.5	-	-	-	-	-	-	-	-	-	-	-	-	
2-Chloroethylvinyl ether	ug/L	-			n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-	
Benzene	ug/L	1		5	7	2.8	-	-	2	-	1	3.1	<1	<0.5	2.6	3.5	3.2	3	3	3	3	2	<1	4	2	2	
Bromochloromethane	ug/L	-		16	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1				-	<1		-	-	-	-	-	-	
Bromodichloromethane	ug/L	1		100	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1		
Bromoform	ug/L	1		100	-	-	-	-	-	-	< 1	<1	<0.2		<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1		
Bromomethane	ug/L	0.89			n.a.	-	-	-	-	-	-	9	<8	<3	< 8	<8	ND	ND	<8	<8	<3.7	<3.7	<3	<3	<0.89	<0.89	
Carbon Tetrachloride	ug/L	0.56	2	-	-	-	-	-	-	-	< 1	<1	<1	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.79	<0.56		
Chlorobenzene	ug/L	1	30	80	-	-	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	1.8	2	2	3	3	<1	4	2	4		
Chloroethane	ug/L	5			n.a.	21.7	-	9.9	8.94	-	-	< 8	<8	<1	< 8	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5	
Chloroform	ug/L	1		100	6	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Chloromethane	ug/L	1			n.a.	8.3	-	-	-	-	-	< 8	<8	<2	< 1	<8	ND	ND	<8	<8	<1	<1	<1	<1	<1	<1	
cis-1,2-Dichloroethene	ug/L	-		-	n.a.	n.a.	-	n.a.	-	-	< 2	<2	<1		<2	ND	ND	-	-	<2			-	-	-		
cis-1,2-Dichloroethylene	ug/L	1.6																		<2	<2	<2	<1.6	<1.6	<1.6		
cis-1,3-Dichloroethene	ug/L	-			n.a.	-	-	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.					-			-	-	-	-	-	
cis-1,3-Dichloropropene	ug/L	0.5			-	-	-	-	-	-	< 2	<2	<0.14		<2	ND	ND	<2	<2	<2	<2	<2	<2	<0.5	<0.5		
Dibromochloromethane	ug/L	1		100	-	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1		
Dibromoethene	ug/L	-																ND				-			-	-	
Dichloromethane	ug/L	-		50	29	59.8	-	-	-	-	-	< 3	<3	<1	< 3	<3	ND	ND	-	-					-	-	
Ethylbenzene	ug/L	2	1.6	140	-	2.2	-	-	3.3	2.7	2	2.4	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	
Ethylene Dibromide	ug/L	-																ND	<1	<1			-	-	-	-	
iso- Propylbenzene (Cumene)	ug/L	-			n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.					-			-	-	-	-	-	
Methylene Chloride (Dichloromethane)	ug/L																										

Table C.5 - MW-24A Volatile Organic Compounds EPA 624

Compound	Units	RDL	AO	MAC	Sep-93	22-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	28-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
1,1 - Dichloroethane	ug/L	1			-	-	2.87	-	-	< 2	<2	<0.4	< 2	<2	ND	ND	<2	<2	<1	<1	ND	<1	<1	<1
1,1 - Dichloroethylene	ug/L	0.6		14	-	-	-	-	-	< 2	<2	<0.5	< 2	<2	ND	ND	<2	<2	<0.66	ND	<0.6	<0.6	<0.6	
1,1,1 - Trichloroethane	ug/L	1			-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1
1,1,2 - Trichloroethane	ug/L	1			-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1
1,1,2-Trichloroethene	ug/L	-			-	-	-	-	-	-	-	-	<1	ND	ND	-	<1	-	-	ND	-	-	-	
1,1,1,2-Tetrachloroethane	ug/L	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	
1,1,2,2-Tetrachloroethane	ug/L	1			-	-	-	-	-	< 1	<1	<1	< 8	<1	ND	ND	<1	-	<1	<1	ND	<1	<1	<1
1,1,2,2-Tetrachloroethene	ug/L	-			-	-	-	-	-	-	-	-	-	<1	ND	ND	-	-	-	-	ND	-	-	-
1,2 - Dibromoethane	ug/L	0.2			n.a.	-	-	-	-	< 1	<1	n.a.	-	<1	ND	ND	-	<1	<1	ND	<0.25	<0.2	<0.2	
1,2 - Dichlorobenzene	ug/L	0.7	3	200	n.a.	-	-	-	-	< 1	<1	<0.5	< 1	<0.5	ND	ND	<0.5	<0.5	<0.7	<0.7	ND	<0.7	<0.7	<0.7
1,2 - Dichloroethane	ug/L	2		5	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	ND	<2	<2	<2
1,2 - Dichloropropane	ug/L	0.7			-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<0.7	<0.7
1,2-Dichloroethene	ug/L	-			n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	<2	-	-	-	-	-	-	ND	-	-	-	
1,3 - Dichlorobenzene	ug/L	1			n.a.	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1
1,4 - Dichlorobenzene	ug/L	1	1	5	n.a.	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	2	<1	ND	<1	<1	<1
1,4 Dichlorobutane	ug/L	-			n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	<1	-	-	-	-	-	-	ND	-	-	-	
1-Chloro 2-Bromopropane	ug/L	-			n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	<1	-	-	-	-	-	-	ND	-	-	-	
2,4 Chlorotoluene	ug/L	-			n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	<0.5	-	-	-	-	-	-	ND	-	-	-	
2-Chloroethylvinyl ether	ug/L	-			n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	ND	-	-	-	
Benzene	ug/L	1		5	-	-	5.66	-	-	< 1	<1	<0.5	< 1	<1	ND	1	<1	<1	3	<1	ND	<1	<1	<1
Bromochloromethane	ug/L	-		16	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	<1	-	-	-	-	<1	-	ND	-	-	-	
Bromodichloromethane	ug/L	1		100	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1
Bromoform	ug/L	1		100	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1
Bromomethane	ug/L	0.89			n.a.	-	-	-	-	< 8	<8	<3	< 8	<8	ND	ND	<8	<8	<3.7	,3.7	ND	<3	<0.89	<0.89
Carbon Tetrachloride	ug/L	0.56		2	-	-	-	-	-	< 1	<1	<1	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<0.79	<0.56	<0.56
Chlorobenzene	ug/L	1	30	80	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	2	<1	<1	4	<1	ND	<1	<1	<1
Chloroethane	ug/L	5			n.a.	-	-	-	-	< 8	<8	<1	< 8	<8	ND	ND	<8	<8	<5	<5	ND	<5	<5	<5
Chloroform	ug/L	1		100	-	-	-	-	-	< 1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1
Chloromethane	ug/L	1			n.a.	-	-	-	-	< 8	<8	<2	< 1	<8	ND	ND	<8	<8	<1	<1	ND	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	-			n.a.	-	-	-	-	< 2	<2	<1	< 2	<2	ND	ND	-	<2	<2	ND	<1.6	<1.6	<1.6	
cis-1,2-Dichloroethylene	ug/L	1.6															<2	<2	<2	ND	<1.6	<1.6	<1.6	
cis-1,3-Dichloroethene	ug/L	-			n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.								ND	-	-	-	
cis-1,3-Dichloropropene	ug/L	0.5			-	-	-	-	-	< 2	<2	<0.14		<2	ND	ND	<2	<2	<2	ND	<2	<0.5	<0.5	
Dibromochloromethane	ug/L	1		100	-	-	-	-	-	< 1	<1	<2	< 1	<1	ND	ND	<1	<1	<1	<1	ND	<1	<1	<1
Dibromoethene	ug/L	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Dichloromethane	ug/L	-		50	-	-	-	-	-	< 3	<3	<1	< 3	<3	ND	ND	-	-	-	-	ND	-	-	-
Ethylbenzene	ug/L	2	1.6	140	-	-	-	-	-	< 1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	ND	<2	<2	<2
Ethylene Dibromide	ug/L	-															<1	<1		ND	-	-	-	
iso- Propylbenzene	ug/L	-			n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.								ND	-	-	-	
Methylene Chloride (Dichloromethane)	ug/L	2		50													<3	<3	<2	ND	<2	<2	<2	
m+p-Xylenes	ug/L	4	300	-	-	-	-	-	-	< 2	<2	<0.5	< 1	<1	ND	ND	<2	<2	<4	<4	ND	<4	<4	<4
n - Propylbenzene	ug/L	-			n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	<8	-	-	-	-	-						

Table C.6 - MW-24B Volatile Organic Compounds EPA 624

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	28-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	
1,1 - Dichloroethane	ug/L	1			2.7	-	-	3.81	2	2	2.5	2.8	0.9	< 2	< 2	ND	ND	< 2	< 2	< 1	< 1	< 1	< 1	< 1	< 1	
1,1 - Dichloroethylene	ug/L	0.6		14	-	-	-	-	-	< 2	< 2	< 0.5	< 2	< 2	ND	ND	< 2	< 2	< 0.66	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6		
1,1,1 - Trichloroethane	ug/L	1			-	-	-	-	-	-	< 1	< 1	< 0.5	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		
1,1,2 - Trichloroethane	ug/L	1			-	-	-	-	-	-	< 1	< 1	< 0.5	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		
1,1,2-Trichloroethene	ug/L	-			-	-	-	-	-	-	-	-	-	-	ND	ND	< 1			-	-	-	-	-		
1,1,1,2-Tetrachloroethane	ug/L	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
1,1,2,2-Tetrachloroethane	ug/L	1			-	-	-	-	-	-	< 1	< 1	< 1	< 8	< 1	ND	ND	-	-	< 1	< 1	< 1	< 1	< 1	< 1	
1,1,2,2-Tetrachloroethene	ug/L	-			-	-	-	-	-	-	-	-	-	-	ND	ND	< 1	-	< 1	-	-	-	-	-	-	
1,2 - Dibromoethane	ug/L	0.2		n.a.	-	-	-	-	-	-	< 1	< 1	n.a.	-	ND	ND	-	-	< 1	< 1	< 1	< 1	< 0.25	< 0.2	< 0.2	
1,2 - Dichlorobenzene	ug/L	0.7	3	200	n.a.	-	1.2	-	-	-	< 1	< 1	< 0.5	< 1	< 0.5	ND	ND	< 0.5	< 0.5	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	
1,2 - Dichloroethane	ug/L	2		5	-	-	-	-	-	-	< 1	< 1	< 0.5	< 1	< 1	ND	ND	< 1	< 1	< 2	< 2	< 2	< 2	< 2	< 2	
1,2 - Dichloropropane	ug/L	0.7			-	-	-	-	-	-	< 1	< 1	< 0.5	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 0.7	< 0.7	
1,2-Dichloroethene	ug/L	-		n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 2				-				-	-	-	-	-
1,3 - Dichlorobenzene	ug/L	1		n.a.	-	-	-	-	-	< 1	< 1	< 0.5	3.1	< 1	ND	ND	< 1	< 1	3	< 1	< 1	< 1	1.52	< 1	< 1	
1,4 - Dichlorobenzene	ug/L	1	1	5	n.a.	-	-	3.21	3.1	4	3	3.7	2.8	< 1	3.3	2.7	4	3	3	3	< 1	4	3	< 1	4	< 1
1,4 Dichlorobutane	ug/L	-		n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-
1-Chloro 2-Bromopropane	ug/L	-		n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	8.1	-	-	-	-	-	-	-	-	-	-	-	-
2,4 Chlorotoluene	ug/L	-		n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 0.5	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyl ether	ug/L	-		n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	ug/L	1		5	-	-	5.3	7.74	7.87	7	6.1	5.9	4.2	5.8	5.5	4.5	5	< 1	4	4	3	< 1	4	3	3	3
Bromochloromethane	ug/L	-		16	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 1				-	< 1			-	-	-	-	-
Bromodichloromethane	ug/L	1		100	-	-	-	-	-	< 1	< 1	< 0.2	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Bromoform	ug/L	1		100	-	-	-	-	-	< 1	< 1	< 0.2	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Bromomethane	ug/L	0.89		n.a.	-	-	-	-	-	< 8	14	< 3	< 8	< 8	ND	ND	< 8	< 8	< 3.7	< 3.7	< 3	< 3	< 0.89	< 0.89	< 0.89	
Carbon Tetrachloride	ug/L	0.56		2	-	-	-	-	-	< 1	< 1	< 1	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 0.79	< 0.56	< 0.56	
Chlorobenzene	ug/L	1	30	80	-	-	2.5	4.92	6.5	8	6.9	9.1	7.8	< 1	8.7	7.6	10	9	8	9	2	9	12	5.24	8	
Chloroethane	ug/L	5		n.a.	9.2	-	-	-	-	< 8	< 8	< 1	< 8	< 8	ND	ND	< 8	< 8	< 5	< 5	< 5	< 5	< 5	< 5	< 5	
Chloroform	ug/L	1		100	-	-	-	-	-	< 1	< 1	< 0.2	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Chloromethane	ug/L	1		n.a.	23	1.5	-	-	-	< 8	< 8	< 2	< 1	< 2	ND	ND	< 8	< 8	< 2	< 2	< 2	< 2	< 1.6	< 1.6	< 1.6	
cis-1,2-Dichloroethene	ug/L	-		n.a.	n.a.	-	-	-	-	< 2	< 2	< 0.14	< 2	< 2	ND	ND	< 2	< 2	< 2	< 2	< 2	< 2	< 0.5	< 0.5	< 0.5	
cis-1,2-Dichloroethylene	ug/L	1.6			-	-	-	-	-	< 1	< 1	< 0.2	< 1	< 1	ND	ND	< 2	< 2	< 2	< 2	< 2	< 2	< 1	< 1	< 1	
cis-1,3-Dichloroethene	ug/L	-		n.a.	-	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	
cis-1,3-Dichloropropene	ug/L	0.5		-	-	-	-	-	-	< 2	< 2	< 0.14	< 2	< 2	ND	ND	< 2	< 2	< 2	< 2	< 2	< 2	< 0.5	< 0.5	< 0.5	
Dibromochloromethane	ug/L	1		100	-	-	-	-	-	< 1	< 1	< 0.2	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Dibromoethene	ug/L	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Dichloromethane	ug/L	-		50	-	-	-	-	-	< 3	< 3	< 1	< 3	< 3	ND	ND	-	-	-	-	-	-	-	-	-	
Ethylbenzene	ug/L	2	1.6	140	-	2.3	5.3	10.5	1.5	-	< 1	< 1	< 0.5	< 1	< 1	ND	ND	< 1	&							

Table C.7 - MW-25B Volatile Organic Compounds EPA 624

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Aug-01	Sep-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	19-Aug-14	22-Jul-15
1,1 - Dichloroethane	ug/L	1			-	-	-	-	-	< 2	<2	<0.4	< 2	<2	ND	ND	<2	<2	1	<1	<1	<1	<1	<1	1	
1,1 - Dichloroethylene	ug/L	0.6		14	-	-	-	-	-	< 2	<2	<0.5	< 2	<2	ND	ND	<2	<2	<0.66	<0.66	<0.6	<0.6	<0.6	<0.6	<0.6	
1,1,1 - Trichloroethane	ug/L	1			-	-	-	-	-	< 1	<1	<1	<5	< 1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,2 - Trichloroethane	ug/L	1			-	-	-	-	-	< 1	<1	<1	<0.5	< 1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,2-Trichloroethene	ug/L	-			-	-	-	-	-	-	-	-	-	-	ND	ND	-	<1	-	-	-	-	-	-	-	
1,1,1,2-Tetrachloroethane	ug/L	0.5			-	-	-	-	-	-	< 1	<1	<1	<1	< 8	<1	ND	ND	-	-	<1	<1	<1	<1	<1	
1,1,2,2-Tetrachloroethane	ug/L	1			-	-	-	-	-	-	< 1	<1	<1	<1	< 8	<1	ND	ND	-	-	<1	<1	<1	<1	<1	
1,1,2,2-Tetrachloroethene	ug/L	-			-	-	-	-	-	-	-	-	-	-	ND	ND	<1	-	-	-	-	-	-	-	-	
1,2 - Dibromoethane	ug/L	0.2		n.a.	-	-	-	-	-	< 1	<1	<1	n.a.	-	<1	ND	ND	-	-	<1	<1	<1	<0.25	<0.2	<0.2	
1,2 - Dichlorobenzene	ug/L	0.7	3	200	n.a.	-	-	-	-	< 1	<1	<1	<0.5	< 1	<0.5	ND	ND	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	
1,2 - Dichloroethane	ug/L	2		5	-	-	-	-	-	< 1	<1	<1	<5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	
1,2 - Dichloropropane	ug/L	0.7			-	-	-	-	-	< 1	<1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.7	<0.7	
1,2-Dichloroethene	ug/L	-		n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 2	-	-	-	-	-	-	-	-	-	-	-	-
1,3 - Dichlorobenzene	ug/L	1		n.a.	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
1,4 - Dichlorobenzene	ug/L	1	1	5	n.a.	-	-	-	-	< 1	<1	<1	<0.5	< 1	<1	ND	ND	<1	<1	1	<1	<1	<1	<1	2	
1,4-Dichlorobutane	ug/L	-		n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-
1-Chloro 2-Bromopropane	ug/L	-		n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-
2,4 Chlorotoluene	ug/L	-		n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 0.5	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyl ether	ug/L	-		n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	ug/L	1		5	-	-	-	-	-	< 1	<1	<1	<5	< 1	<1	ND	ND	1	<1	1	<1	<1	<1	<1	<1	
Bromochloromethane	ug/L	-		16	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	ug/L	1		100	-	-	-	-	-	< 1	<1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Bromoform	ug/L	1		100	-	-	-	-	-	< 1	<1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Bromomethane	ug/L	0.89		n.a.	-	-	-	-	-	< 8	<8	<8	<8	< 3	<8	<8	ND	ND	<8	<8	<3.7	<3.7	<3	<3	<0.89	<0.89
Carbon Tetrachloride	ug/L	0.56		2	-	-	-	-	-	< 1	<1	<1	<1	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<0.79	<0.56	
Chlorobenzene	ug/L	1	30	80	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	<1	ND	ND	1	<1	1	<1	<1	<1	<1	<1	
Chloroethane	ug/L	5		n.a.	-	-	n.a.	-	-	< 8	<8	<8	<8	< 1	<8	<8	ND	ND	<8	<8	<5	<5	<5	<5	<5	<5
Chloroform	ug/L	1		100	-	-	-	-	-	< 1	<1	<1	<0.2	< 1	<1	ND	ND	<1	<1	<1	<1	<1	<1	<1	<1	
Chloromethane	ug/L	1		n.a.	-	-	-	-	-	< 8	<8	<8	<8	< 2	<1	ND	ND	<8	<8	<1	<1	<1	<1	<1	<1	
cis-1,2-Dichloroethene	ug/L	-		n.a.	n.a.	-	n.a.	n.a.	n.a.	< 2	<2	<2	<2	< 1	<2	ND	ND	<2	<2	<2	<2	<2	<2	<1.6	<1.6	
cis-1,2-Dichloroethylene	ug/L	1.6												-	-	-	-	-	<2	<2	<2	<2	<2	<2	<1.6	<1.6
cis-1,3-Dichloroethene	ug/L	-		n.a.	-	-	n.a.	-	-	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	
cis 1,3-Dichloropropene	ug/L	0.5								< 2	<2	<2	<0.14	-	<2	ND	ND	<2	<2	<2	<2	<2	<2	<0.5	<0.5	
Dibromochloromethane	ug/L	1		100	-	-	-	-	-	< 1	<1	<1	<0.2	< 1	<1	ND	ND	-	<1	<1	<1	<1	<1	<1	<1	
Dibromoethene	ug/L	-												-	-	-	-	-	-	-	-	-	-	-	-	
Dichloromethane	ug/L	-		50	3	-	-	-	-	< 3	<3	<3	<1	< 3	-	-	-	-	-	-	-	-	-	-	-	
Ethylbenzene	ug/L	2	1.6	140	-	-	-	-	-	< 1	<1	<1	<0.5	< 1	<1	ND	ND	<1	<1	<2	<2	<2	<2	<2	<2	
Ethylene Dibromide	ug/L	-												-	-	-	-	-	<1	<1	-	-	-	-	-	-
iso- Propylbenzene	ug/L	-		n.a.	n.a.	n.a.	-	n.a.	n.a																	

Table C.8 - TH-1 Volatile Organic Compounds EPA 624

Compound	Units	RDL	AO	MAC	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	19-Aug-03	25-Aug-04	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	19-Aug-14	22-Jul-15
1,1 - Dichloroethane	ug/L	1			4.3	-	1.2	1.57	-	-	< 2	< 2	< 4.3	< 2	2.4	2.5	ND	ND	< 2	< 2	< 1	< 1	< 1	< 1	< 1	< 1
1,1 - Dichloroethylene	ug/L	0.6		14	-	-	-	-	-	-	< 2	< 2	< 0.5	3.9	< 2	< 2	ND	ND	< 2	< 2	< 0.66	< 0.66	< 0.6	< 0.6	< 0.6	
1,1,1 - Trichloroethane	ug/L	1			-	-	-	-	-	-	< 1	< 1	< 5	< 1	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
1,1,2 - Trichloroethane	ug/L	1			-	-	-	-	-	-	< 1	< 1	< 0.5	< 1	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
1,1,2-Trichloroethene	ug/L	-			-	-	-	-	-	-	-	-	-	< 1	< 1	ND	ND	< 1					-	-	-	
1,1,1,2-Tetrachloroethane	ug/L	0.5			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.5	< 0.5	< 0.5		
1,1,2,2-Tetrachloroethane	ug/L	1			-	-	-	-	-	-	-	-	-	< 1	< 1	< 1	ND	ND	-			< 1	< 1	< 1	< 1	
1,1,2,2-Tetrachloroethene	ug/L	-			-	-	-	-	-	-	< 1	< 1	< 8	< 1	< 1	< 1	ND	ND	< 1	-	< 1	< 1	-	-	-	
1,2 - Dibromoethane	ug/L	0.2		n.a.	-	-	-	-	-	-	< 1	< 1	n.a.	< 1	< 1	ND	ND	-	< 1	< 1	< 1	< 1	< 0.25	< 0.2	< 0.2	
1,2 - Dichlorobenzene	ug/L	0.7	3	200	n.a.	5.3	-	1.26	-	-	< 1	< 1	< 0.5	< 1	< 0.5	< 0.5	ND	ND	< 0.5	< 0.5	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	
1,2 - Dichloroethane	ug/L	2		5	-	-	-	-	-	-	< 1	< 1	< 5	< 1	< 1	< 1	ND	ND	< 1	< 1	< 2	< 2	< 2	< 2	< 2	
1,2 - Dichloropropane	ug/L	0.7		-	-	-	-	-	-	-	< 1	< 1	< 0.5	< 1	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 0.7	< 0.7	
1,2-Dichloroethene	ug/L	-		n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	< 2											-	-	-		
1,3 - Dichlorobenzene	ug/L	1		n.a.	-	-	-	-	-	< 1	< 1	< 0.5	< 1	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	2	< 1		
1,4 - Dichlorobenzene	ug/L	1	1	5	n.a.	1.6	3.5	7.3	8.5	8	5.3	< 1	6.4	6.5	3.2	3.3	4.1	5	4	4	3	< 1	4	3	< 1	3
1,4 Dichlorobutane	ug/L	-		n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-	
1-Chloro 2-Bromopropane	ug/L	-		n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	< 1	-	-	-	-	-	-	-	-	-	-	-	-	
2,4 Chlorotoluene	ug/L	-		n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	< 0.5	-	-	-	-	-	-	-	-	-	-	-	-	-		
2-Chloroethylvinyl ether	ug/L	-		n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-	-	-	-	-	-	-	
Benzene	ug/L	1		5	18.3	9.8	6.6	6.05	13	10	8	< 1	< 4.4	4.2	2.3	2.4	1.9	1	1	1	< 1	< 1	1	< 1	< 1	
Bromochloromethane	ug/L	-		16	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	n.a.	< 1										-	-	-	
Bromodichloromethane	ug/L	1		100	-	-	-	-	-	< 1	< 1	< 0.2	< 1	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Bromoform	ug/L	1		100	-	-	-	-	-	< 1	< 1	< 0.2	< 1	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Bromomethane	ug/L	0.89		n.a.	-	-	-	-	-	< 8	< 8	< 3	< 8	< 8	< 8	ND	ND	< 8	< 8	< 3.7	< 3.7	< 3	< 3	< 0.89	< 0.89	
Carbon Tetrachloride	ug/L	0.56	2	-	-	-	-	-	-	< 1	< 1	< 1	< 1	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 0.79	< 0.56	< 0.56	
Chlorobenzene	ug/L	1	30	80	30.2	17.2	14	16.5	30.4	29	24	< 1	19	18	9.4	9.5	9.3	6	6	5	4	1	6	4	2	4
Chloroethane	ug/L	5		n.a.	-	-	-	-	-	< 8	< 8	< 1	< 8	< 8	< 8	ND	ND	< 8	< 8	< 5	< 5	< 5	< 5	< 5	< 5	
Chloroform	ug/L	1		100	-	-	-	-	-	< 1	< 1	< 0.2	< 1	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Chloromethane	ug/L	1		n.a.	16.7	-	-	-	-	< 8	< 8	< 2	< 1	< 8	< 8	ND	ND	< 8	< 8	< 1	< 1	< 1	< 1	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	-																								
cis-1,2-Dichloroethylene	ug/L	1.6		-	n.a.	n.a.	-	-	-	< 2	< 2	< 1							< 2	< 2	< 2	< 2	< 1.6	< 1.6	< 1.6	
cis-1,3-Dichloroethene	ug/L	-		n.a.	-	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.		
cis 1,3-Dichloropropene	ug/L	0.5		-	n.a.	n.a.	-	-	-	< 2	< 2	< 0.14		< 2	< 2	ND	ND	< 2	< 2	< 2	< 2	< 2	< 0.5	< 0.5		
Dibromochloromethane	ug/L	1		100	-	-	-	-	-	< 1	< 1	< 0.2	< 1	< 1	< 1	ND	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Dibromoethene	ug/L	-																								
Dichloromethane	ug/L	-		50	-	-	-	-	-	< 3	< 3	< 1	< 3													
Ethylbenzene	ug/L	2	2.4		8.9	4.4	1.2	1.19	-	-	< 1															

Table D.1 - MW-4A EPA-625 Historical Summary

Notes:

RDL - Reported Detection

RDL - Reported Detection
ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration
Starting in 2010, Bold indicates exceedance in aesthetic objective.

Starting in 2010 Bold indicate
Starting in 2010 Grey indicate

Starting in 2010 Grey indicates exceedance in maximum allowable concentration
MW-40D – Duplicate of MW-1A

Table D.2 - MW-22B EPA-625 Historical Summary

Compound	RDL	Units	AO	MAC	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sep-02	16-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15
1,2,3,4 - Tetrachlorobenzene	0.05	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	
1,2,3,5 - Tetrachlorobenzene	0.05	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	
1,2,3 - Trichlorobenzene	0.05	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	
1,2,4,5 - Tetrachlorobenzene	0.05	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	
1,2,4 - Trichlorobenzene	0.05	µg/L			-	-	-	-	ND	ND	<2	ND	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
1,2 - Dichlorobenzene	0.7	µg/L	3	200	-	-	-	-	ND	ND	n.a.	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.7	<0.7	<0.7	
1,3,5 - Trichlorobenzene	0.05	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	
1,3 - Dichlorobenzene	1.0	µg/L			-	-	-	-	ND	ND	n.a.	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	
1,4 - Dichlorobenzene	1.0	µg/L	1	5	-	-	-	-	ND	ND	n.a.	ND	ND	ND	0.7	0.8	0.7	0.7	<0.5	<0.5	1	2	<1	2
1 - Chloronaphthalene	0.5	µg/L			-	-	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
1 - Methylnaphthalene	0.01	µg/L			-	-	-	-	ND	ND	n.a.	ND	ND	ND	<0.2	<0.2	<0.2	0.07	<0.01	<0.01	<0.5	<0.2	<0.01	
2,3,4,5 - Tetrachlorophenol	0.5	µg/L			-	-	n.a.	n.a.	ND	ND	n.a.	ND	ND	ND	<0.4	<0.4	<0.4	<0.5	<0.5	<0.5	-	-	<0.5	
2,3,4,6 - Tetrachlorophenol	0.5	µg/L	1	100	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,3,4 - Trichlorophenol	0.5	µg/L			-	-	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,3,5,6 - Tetrachlorophenol	0.5	µg/L			-	-	n.a.	n.a.	ND	ND	n.a.	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,3,5 - Trichlorophenol	0.5	µg/L			-	-	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,3,6 - Trichlorophenol	0.5	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,3 - Dichlorophenol	0.5	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	-	-	
2,4,5 - Trichlorophenol	0.2	µg/L	2	5	-	-	-	-	ND	ND	n.a.	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<0.2	
2,4 - Dichlorophenol	0.2	µg/L	0.3	900	-	-	-	-	ND	ND	<2	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.3	<0.3	<0.3	
2,4 - Dimethylphenol	0.5	µg/L			-	-	-	-	ND	ND	<2	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,4 - Dinitrophenol	10.0	µg/L			-	-	-	-	ND	ND	<5	ND	ND	ND	<2	<2	<2	<6	<0.5	<10	<10	<10	<0.5	
2,4 - Dinitrotoluene	0.5	µg/L			-	-	-	-	ND	ND	<2	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,5 - Dichlorophenol	0.5	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	-	-	
2,6 - Dichlorophenol	0.5	µg/L			-	-	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,6 - Dinitrotoluene	0.5	µg/L			-	-	-	-	ND	ND	<2	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2 - Chloronaphthalene	0.5	µg/L			-	-	-	-	ND	ND	<2	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2 - Chlorophenol	0.3	µg/L			-	-	-	-	ND	ND	n.a.	ND	ND	ND	<0.3	<0.3	<0.3	<0.5	<0.5	<0.5	<0.3	<0.3	<0.3	
2 - Methylnaphthalene	0.01	µg/L			-	-	-	-	ND	ND	n.a.	ND	ND	ND	<0.2	<0.2	<0.2	0.09	0.02	<0.01	<0.5	<0.5	<0.01	
2 - Nitrophenol	0.5	µg/L			-	-	-	-	ND	ND	<2	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
3,3' - Dichlorobenzidine	0.5	µg/L			-	-	-	-	ND	ND	n.a.	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
3,4,5 - Trichlorophenol	0.5	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
3,4 - Dichlorophenol	0.5	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
3,5 - Dichlorophenol	0.5	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	-	-	
4,6-Dinitro-2-methyphenol	1.0	µg/L			-	-	-	-	-	-	-	-	-	-	-	-	<2	<6			<1.0	<0.5	<1.0	
4 - Bromophenyl Phenyl Ether	0.3	µg/L			-	-	-	-	ND	ND	<2	ND	ND	ND	<0.3	<0.3	<0.3	<0.5	<0.5	<0.5	<0.3	<0.5	<0.3	
4 - Chloro - 3 - Methylphenol	0.5	µg/L			-	-	-	-	-	-	1.4	ND	n.a.	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
4 - Chloroph																								

Table D.3 - MW-24B EPA-625 Historical Summary

Compound	RDL	Units	AO	MAC	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	16-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	12-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	
1,2,3,4 - Tetrachlorobenzene	0.05	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
1,2,3,5 - Tetrachlorobenzene	0.05	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
1,2,3 - Trichlorobenzene	0.05	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
1,2,4,5 - Tetrachlorobenzene	0.05	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
1,2,4 - Trichlorobenzene	0.05	µg/L			-	-	-	-	ND	ND	<2	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
1,2 - Dichlorobenzene	0.7	µg/L	3	200	-	-	-	-	ND	ND	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.7	<0.7	<0.7	<0.7	<0.7		
1,3,5 - Trichlorobenzene	0.05	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
1,3 - Dichlorobenzene	1.0	µg/L			-	-	-	-	ND	ND	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
1,4 - Dichlorobenzene	1.0	µg/L	1	5	-	2.47	1.5	2.3	2.2	1.9	n.a.	2.0	2.2	2.9	1.8	2.4	2.3	1.8	<0.5	<0.5	4	3	<1	4	
1 - Chloronaphthalene	0.5	µg/L			-	-	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	
1 - Methylnaphthalene	0.01	µg/L			-	-	-	-	0.3	0.3	n.a.	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.49	0.12	0.07	<0.5	0.25	0.24	
2,3,4,5 - Tetrachlorophenol	0.5	µg/L			-	-	n.a.	n.a.	ND	ND	n.a.	ND	ND	<0.4	<0.4	<0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,3,4,6 - Tetrachlorophenol	0.5	µg/L	1	100	-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,3,4 - Trichlorophenol	0.5	µg/L			-	-	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,3,5,6 - Tetrachlorophenol	0.5	µg/L			-	-	n.a.	n.a.	ND	ND	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,3,5 - Trichlorophenol	0.5	µg/L			-	-	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,3,6 - Trichlorophenol	0.5	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,3 - Dichlorophenol	0.5	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
2,4,5 - Trichlorophenol	0.2	µg/L			-	-	-	-	ND	ND	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	
2,4,6 - Trichlorophenol	0.2	µg/L	2	5	-	-	-	-	ND	ND	<2	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	
2,4 - Dichlorophenol	0.3	µg/L	0.3	900	-	-	-	-	ND	ND	<2	ND	ND	<0.3	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	
2,4 - Dimethylphenol	0.5	µg/L			-	-	-	-	ND	0.7	<2	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,4 - Dinitrophenol	10.0	µg/L			-	-	-	-	ND	ND	<5	ND	ND	<2	<2	<2	<6	<0.5	<10	<10	<10	<10	<10	<10	
2,4 - Dinitrotoluene	0.5	µg/L			-	-	-	-	ND	ND	<2	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,5 - Dichlorophenol	0.5	µg/L			-	-	-	-	ND	ND	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	
2,6 - Dichlorophenol	0.5	µg/L			-	-	n.a.	n.a.	n.a.	n.a.	n.a.	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2,6 - Dinitrotoluene	0.5	µg/L			-	-	-	-	ND	ND	<2	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2 - Chloronaphthalene	0.5	µg/L			-	-	-	-	ND	ND	<2	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
2 - Chlorophenol	0.3	µg/L			-	-	-	-	ND	ND	n.a.	ND	ND	<0.3	<0.3	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.3	
2 - Methylnaphthalene	0.01	µg/L			-	-	-	-	0.2	0.2	0.6	n.a.	0.3	0.3	0.6	0.5	0.3	0.4	0.3	0.57	0.02	0.18	<0.5	0.36	<0.5
2 - Nitrophenol	0.5	µg/L			-	-	-	-	ND	ND	<2	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
3,3' - Dichlorobenzidine	0.5	µg/L			-	-	-	-	ND	ND	<2	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
3,4,5 - Trichlorophenol	0.5	µg/L			-	-	-	-	-	-	-	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
3,4 - Dichlorophenol	0.5	µg/L			-	-	-	-	ND	ND	<2	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
3,5 - Dichlorophenol	0.5	µg/L			-	-	-	-	ND	ND	<2	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2					

Table D.4 - TH-1 EPA-625 Historical Summary

Notes:
RDL - Reported Detection Limit (updated in 2015)

RDL - Reported Detection Limit (updated in 2015)
ND - Values below RDL

AO = CDWQ Guideline / Standard Aesthetic Objective

MAC = CDWQ Guideline / Standard Maximum Allowable Concentration
Station 1: 2010 P-111 Well - 1000 mg/L - 1000 mg/L

Starting in 2010 Bold indicates exceedance in aesthetic objective.

Appendix D

Chemistry Trend Analysis

Figure D-1 - Historical Results of Manganese in Up-gradient Monitoring Wells

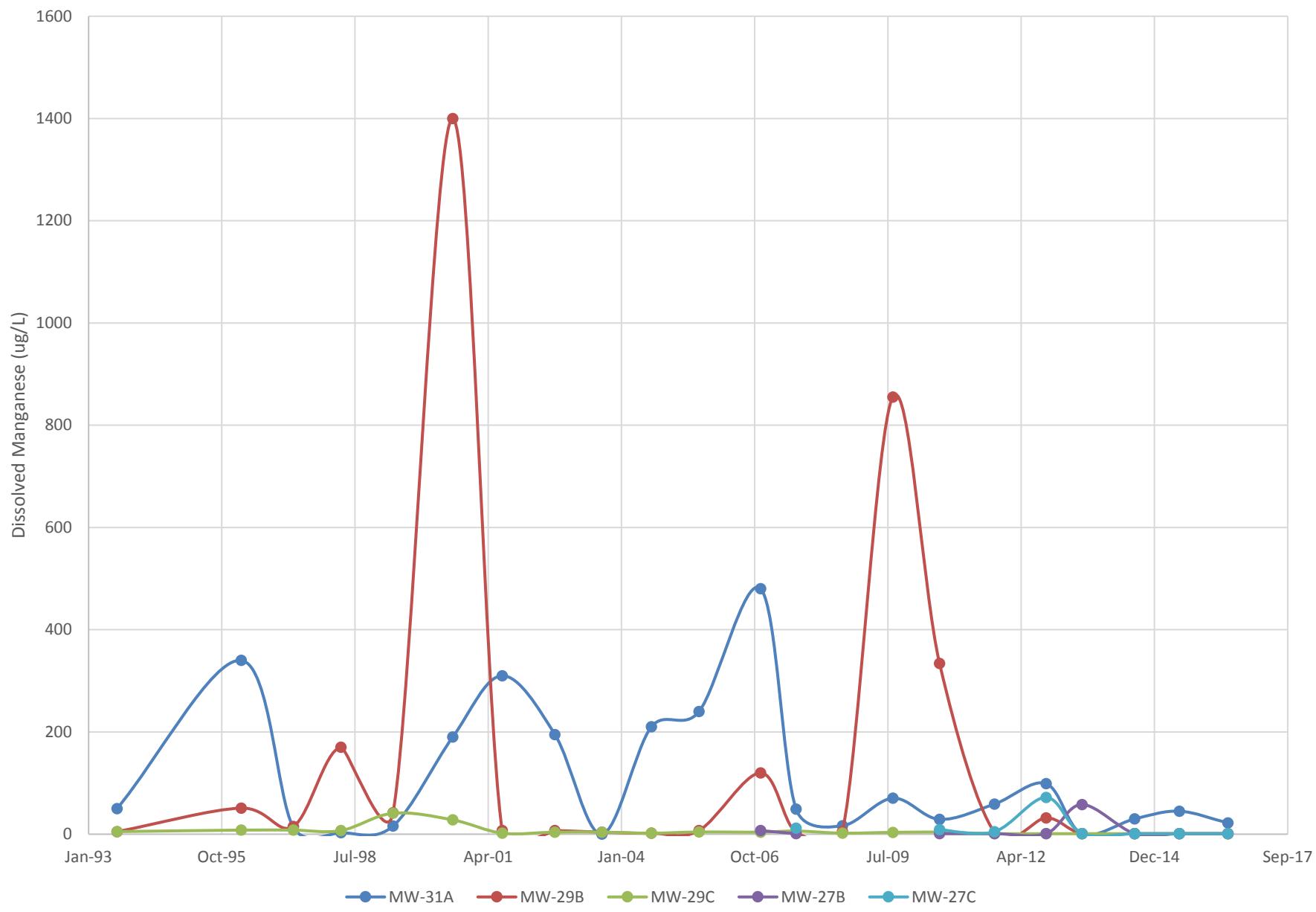


Figure D-2 - Historical Results of Manganese in Down-gradient Monitoring Wells

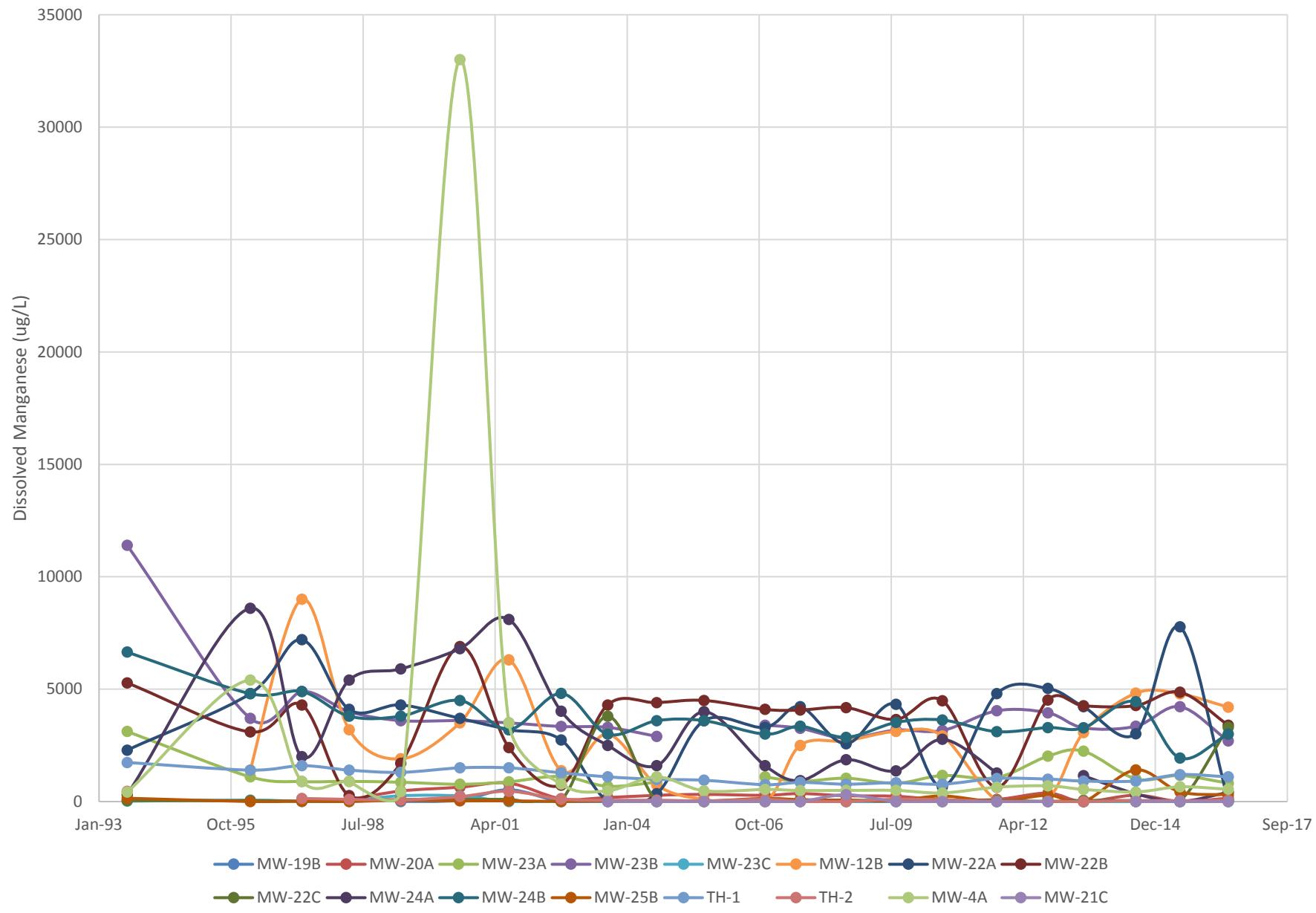


Figure D-3 - Historical Results of Conductivity in Up-gradient Monitoring Wells

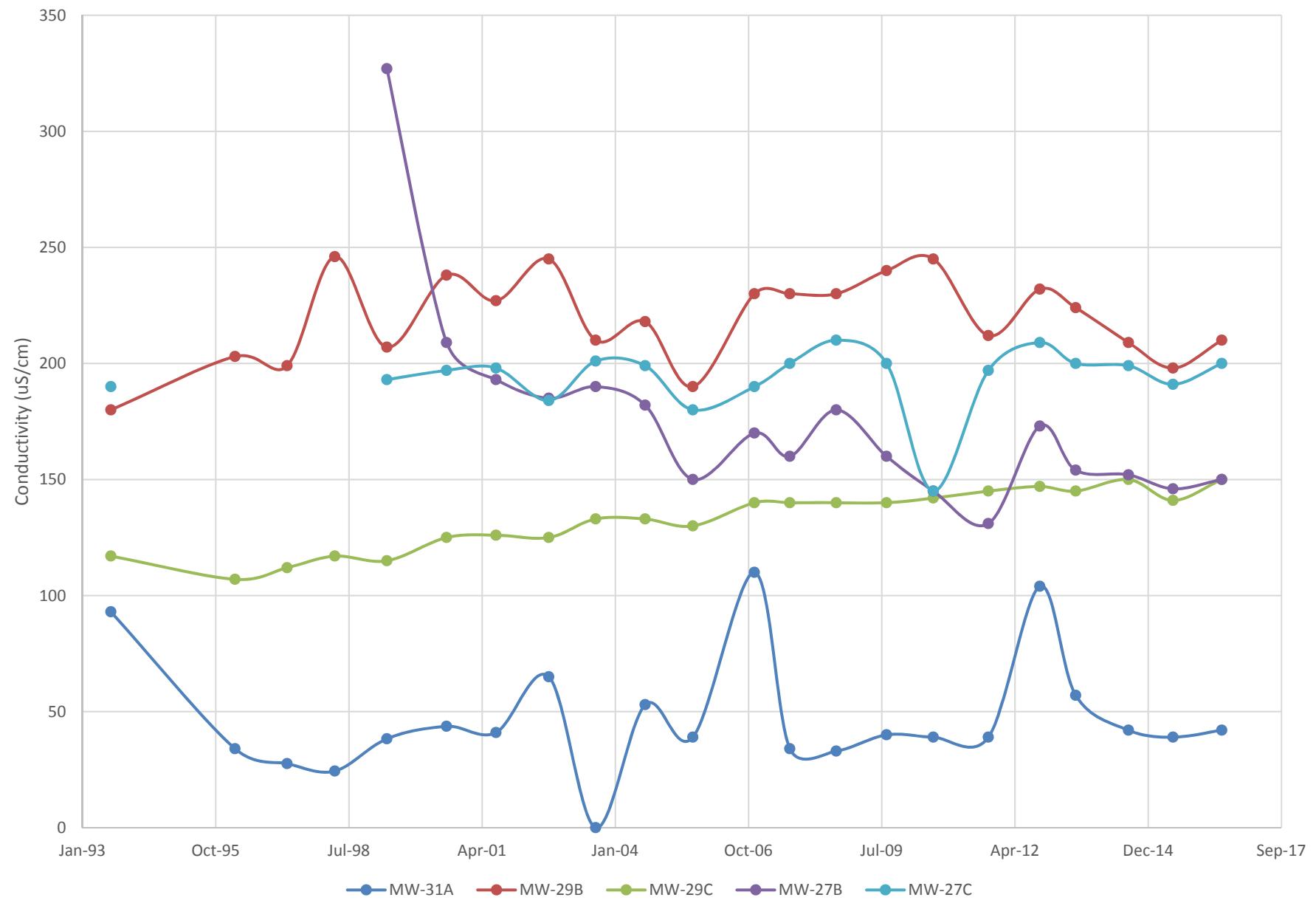


Figure D-4 - Historical Results of Conductivity in Down-gradient Monitoring Wells

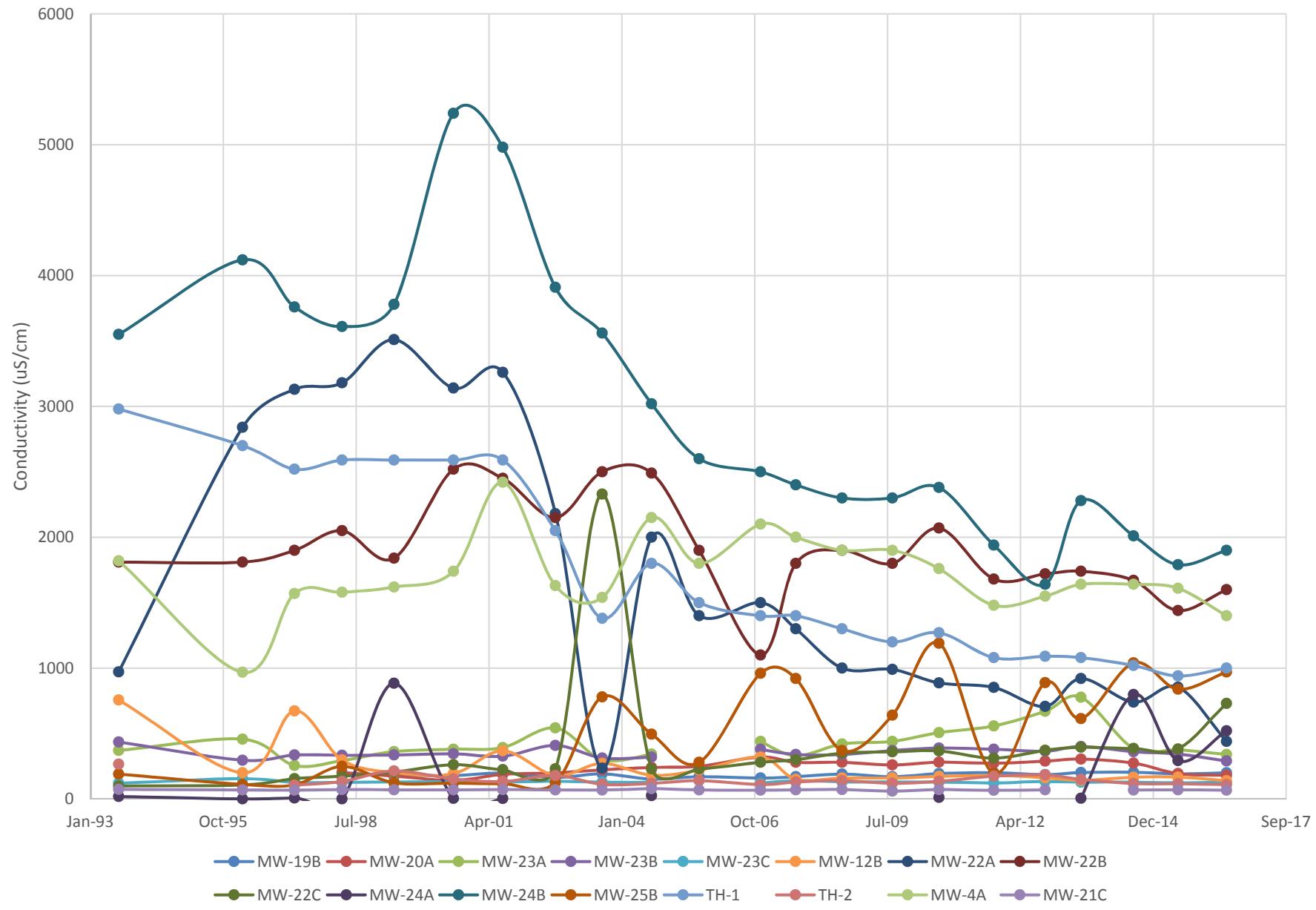


Figure D-5 - Historical results of Ammonia in up-gradient monitoring wells

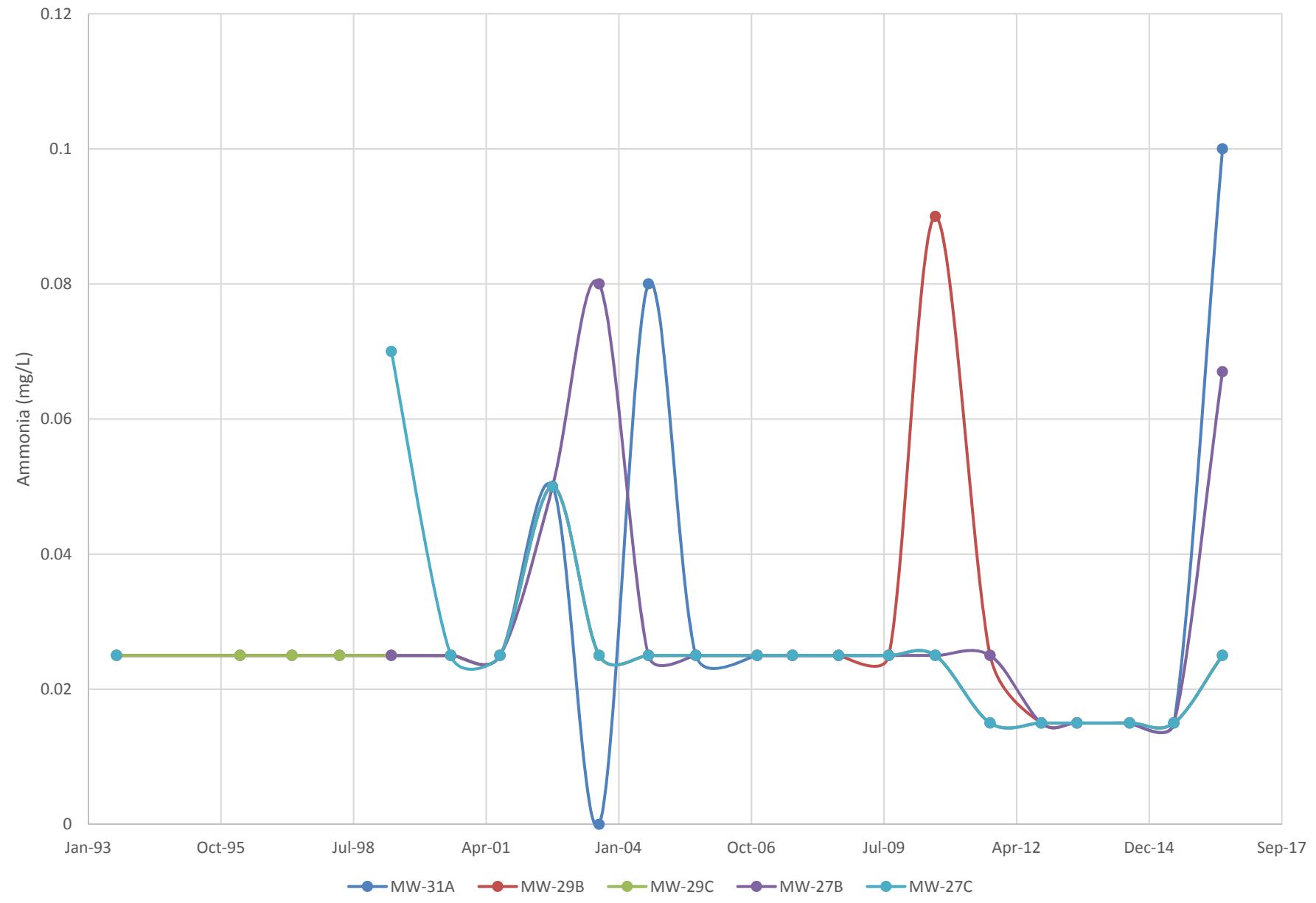


Figure D-6 - Historical Results of Ammonia in Down-gradient Monitoring Wells

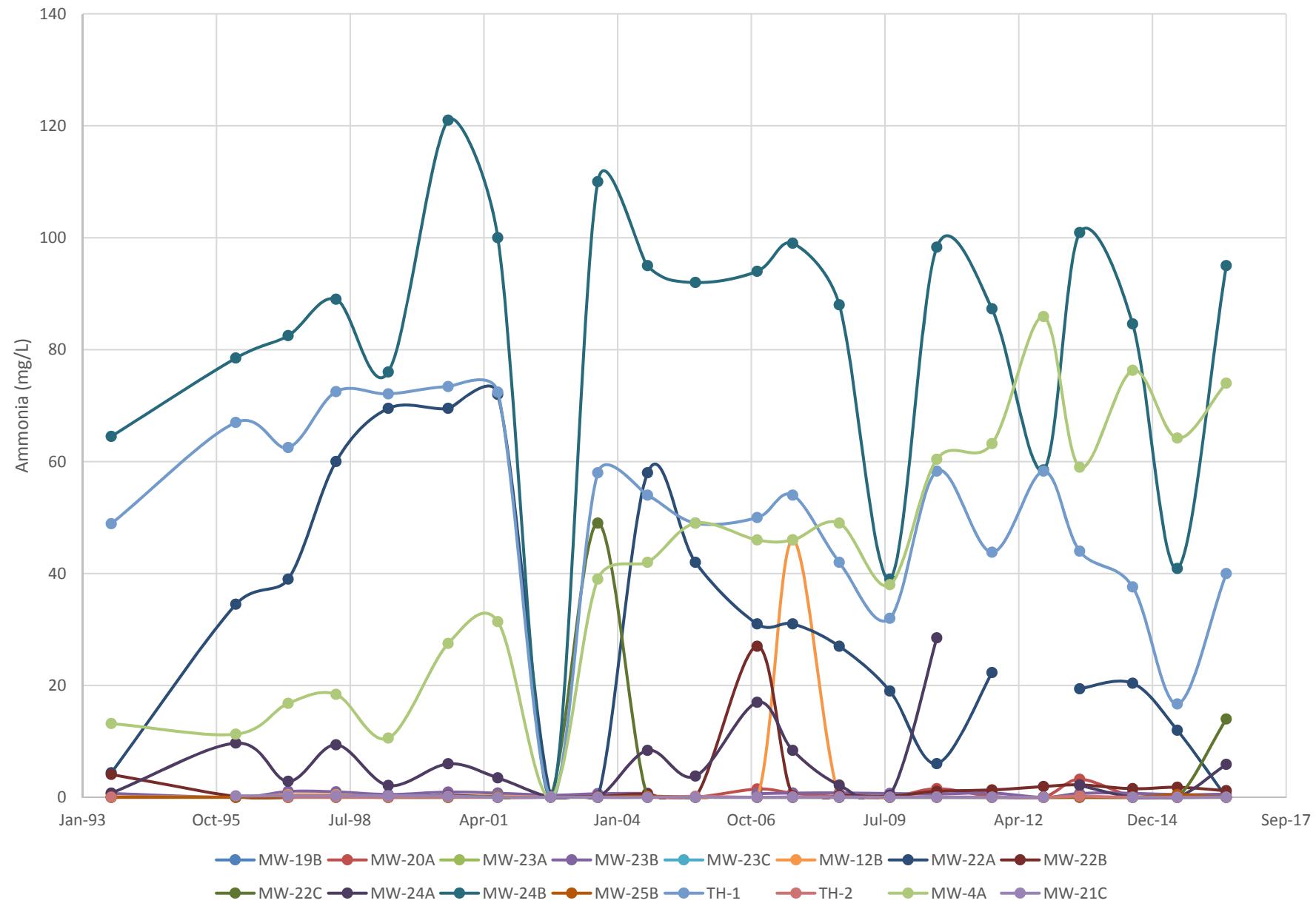


Figure D-7 - Historical Results of Sodium in Up-gradient Monitoring Wells

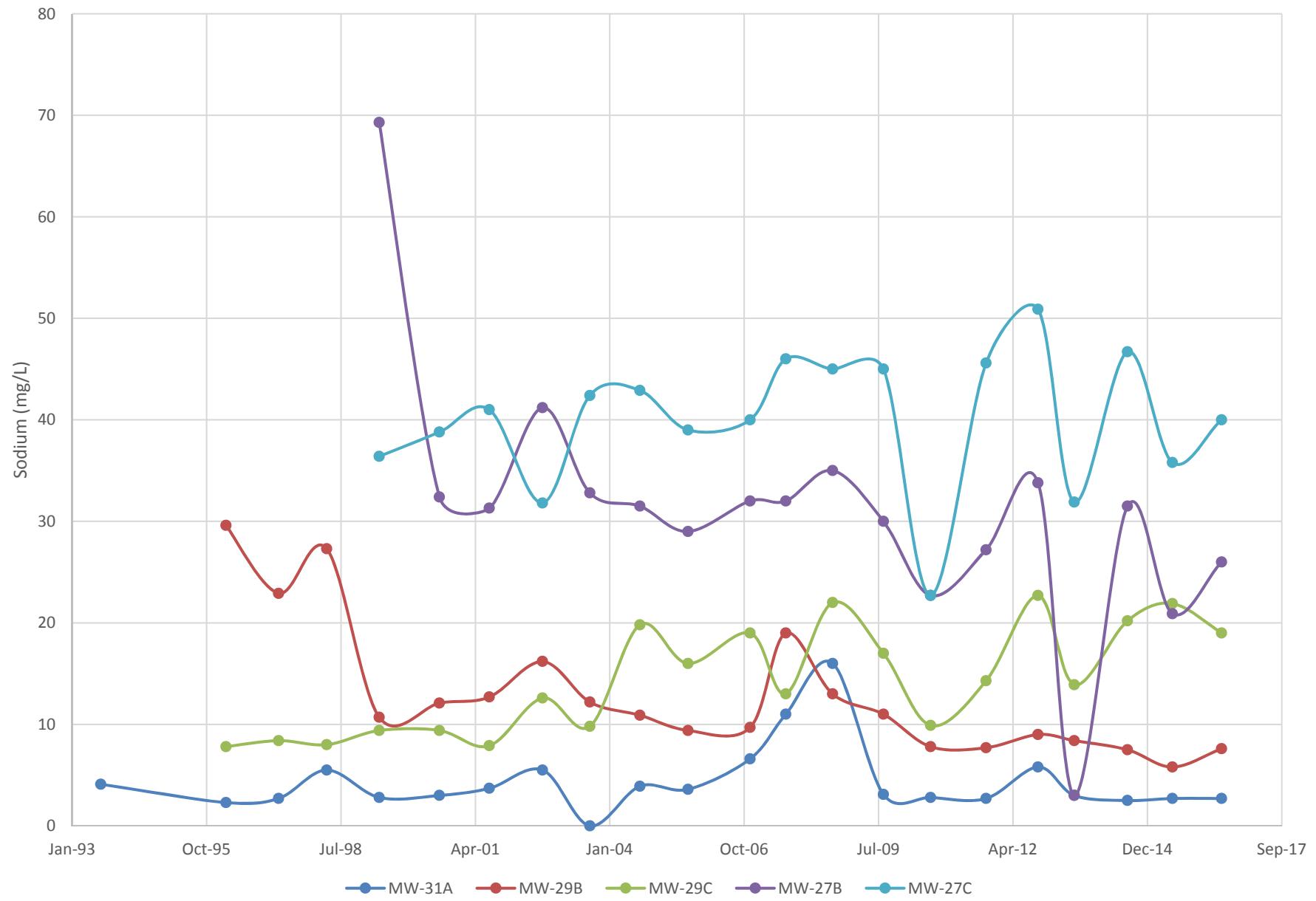


Figure D-8 - Historical Results of Sodium in Down-gradient Monitoring Wells

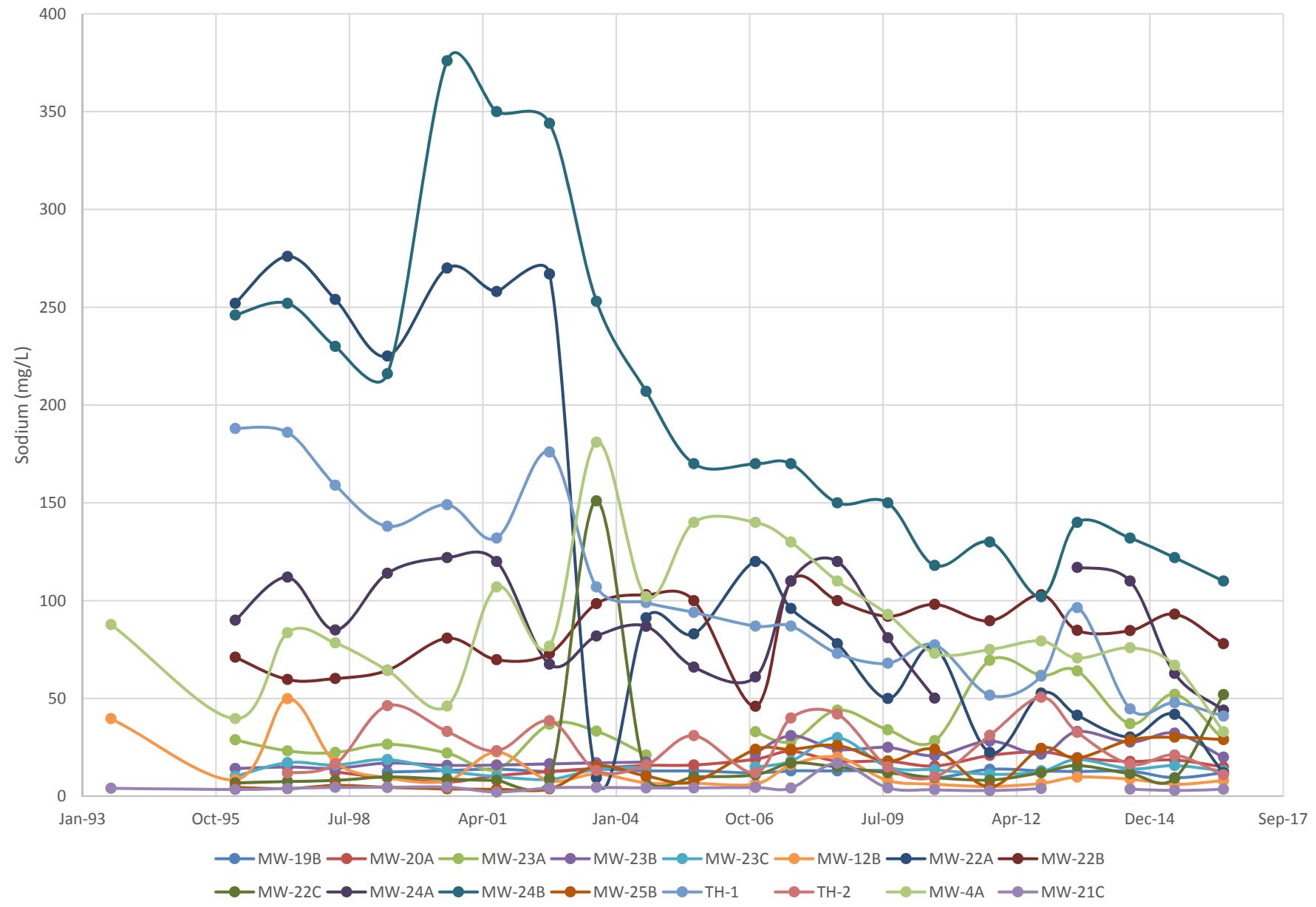


Figure D-9 - Historical Results of Chloride in Up-gradient Monitoring Wells

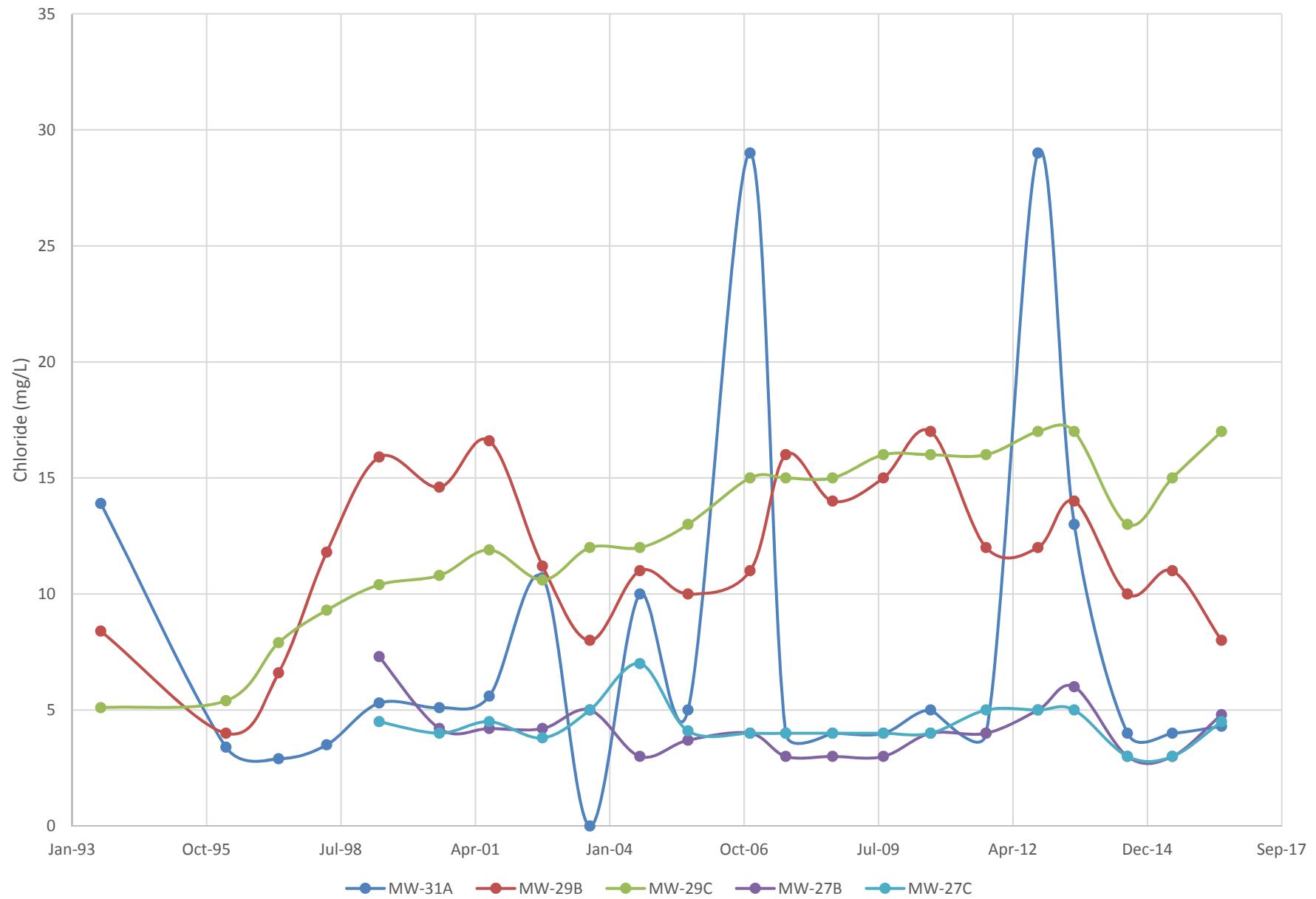


Figure D-10 - Historical Results of Chloride in Down-gradient Monitoring Wells

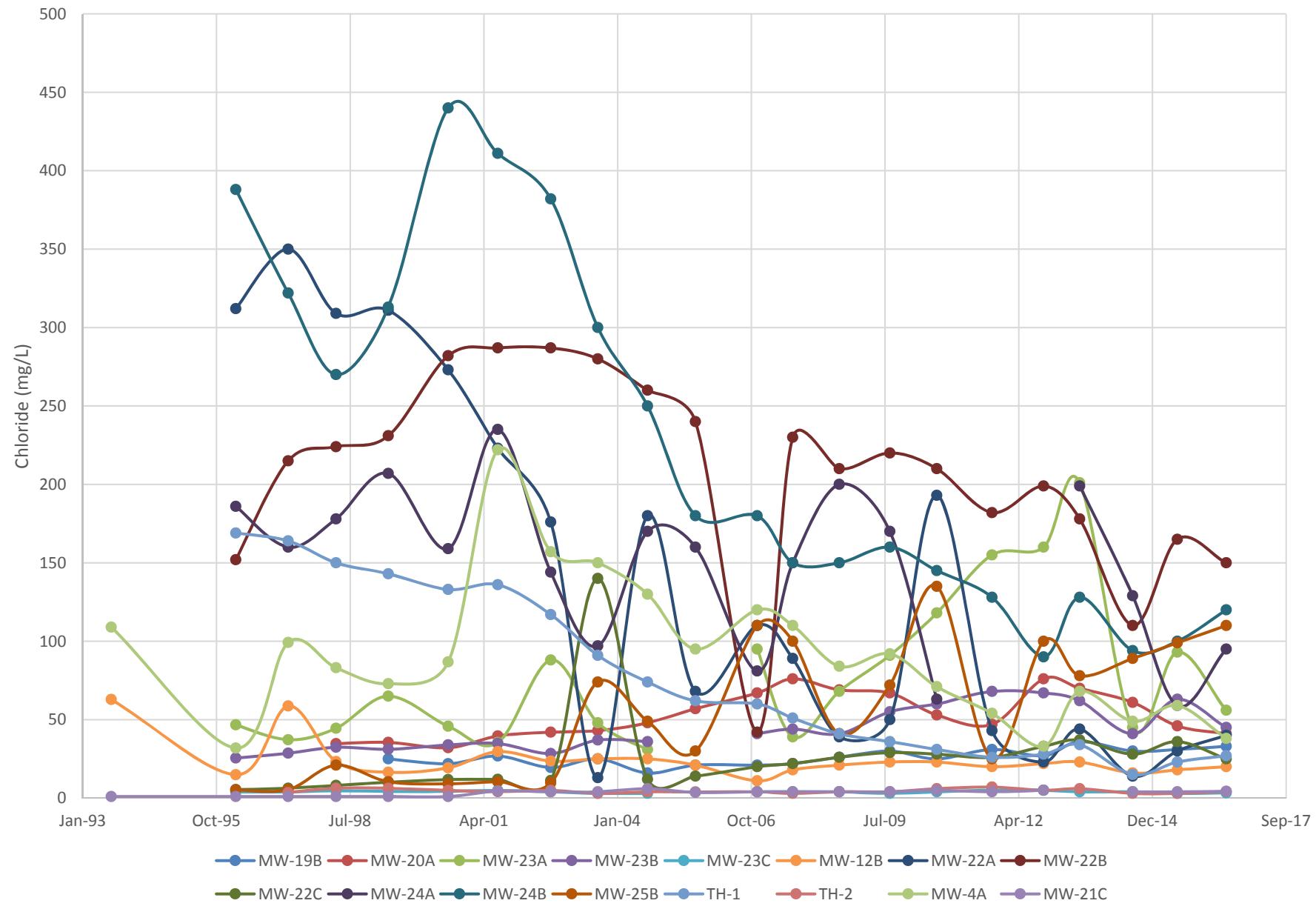


Figure D-11 - Historical Results of Iron in Up-gradient Monitoring Wells

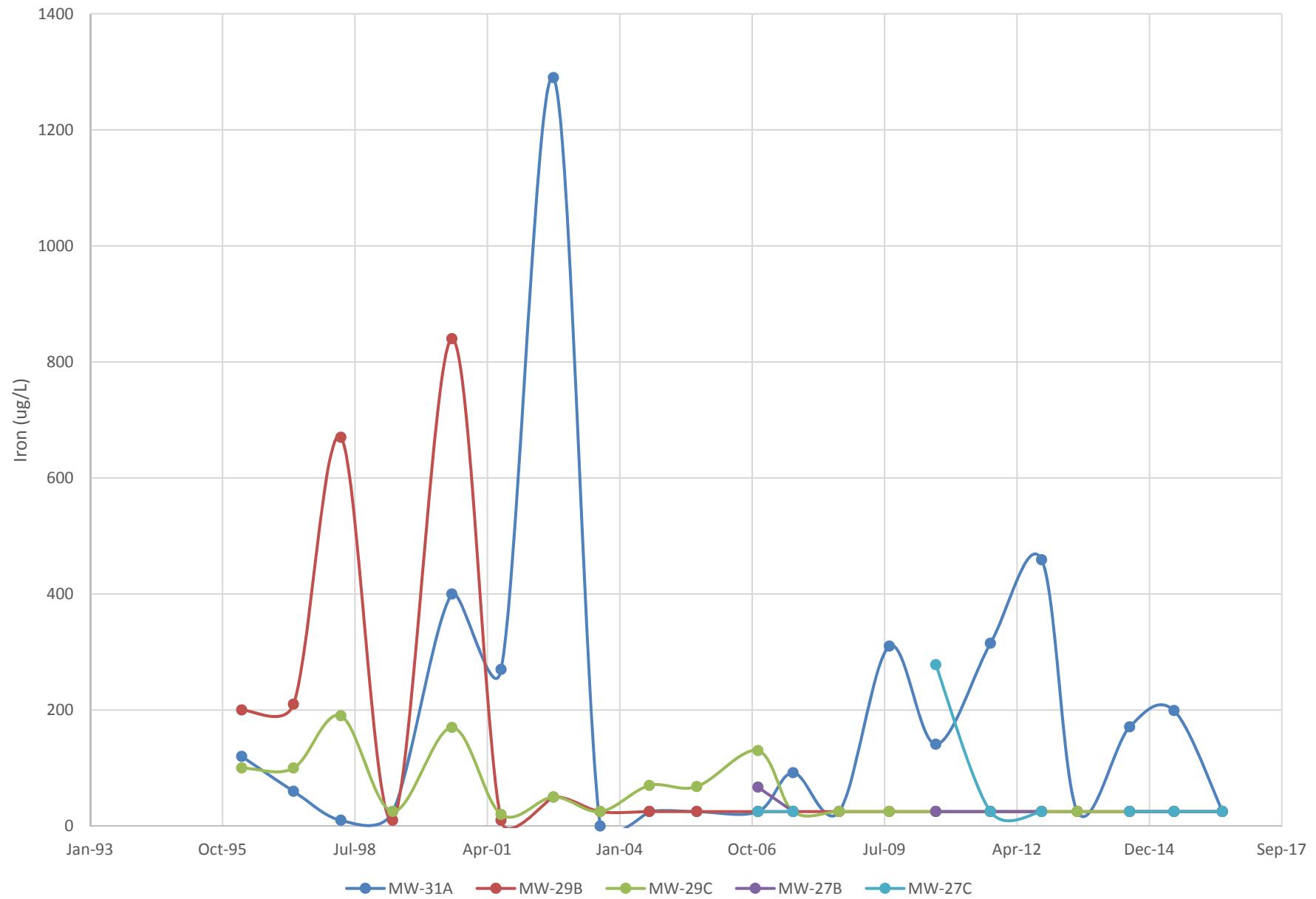


Figure D-12 - Historical Results of Iron in Down-gradient Monitoring Wells

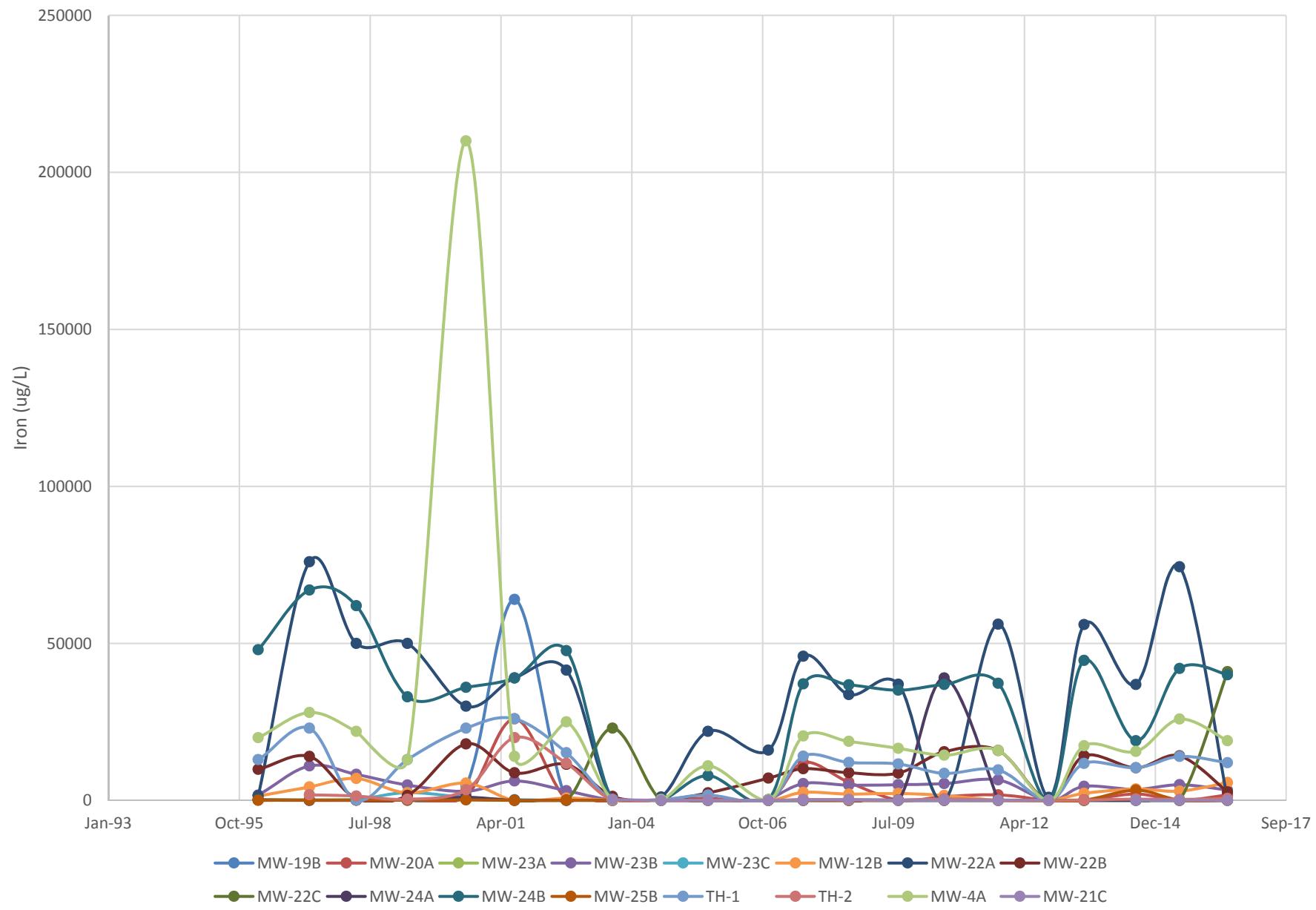


Figure D-13 - Historical Results of Total VOCs in Down-gradient Monitoring Wells

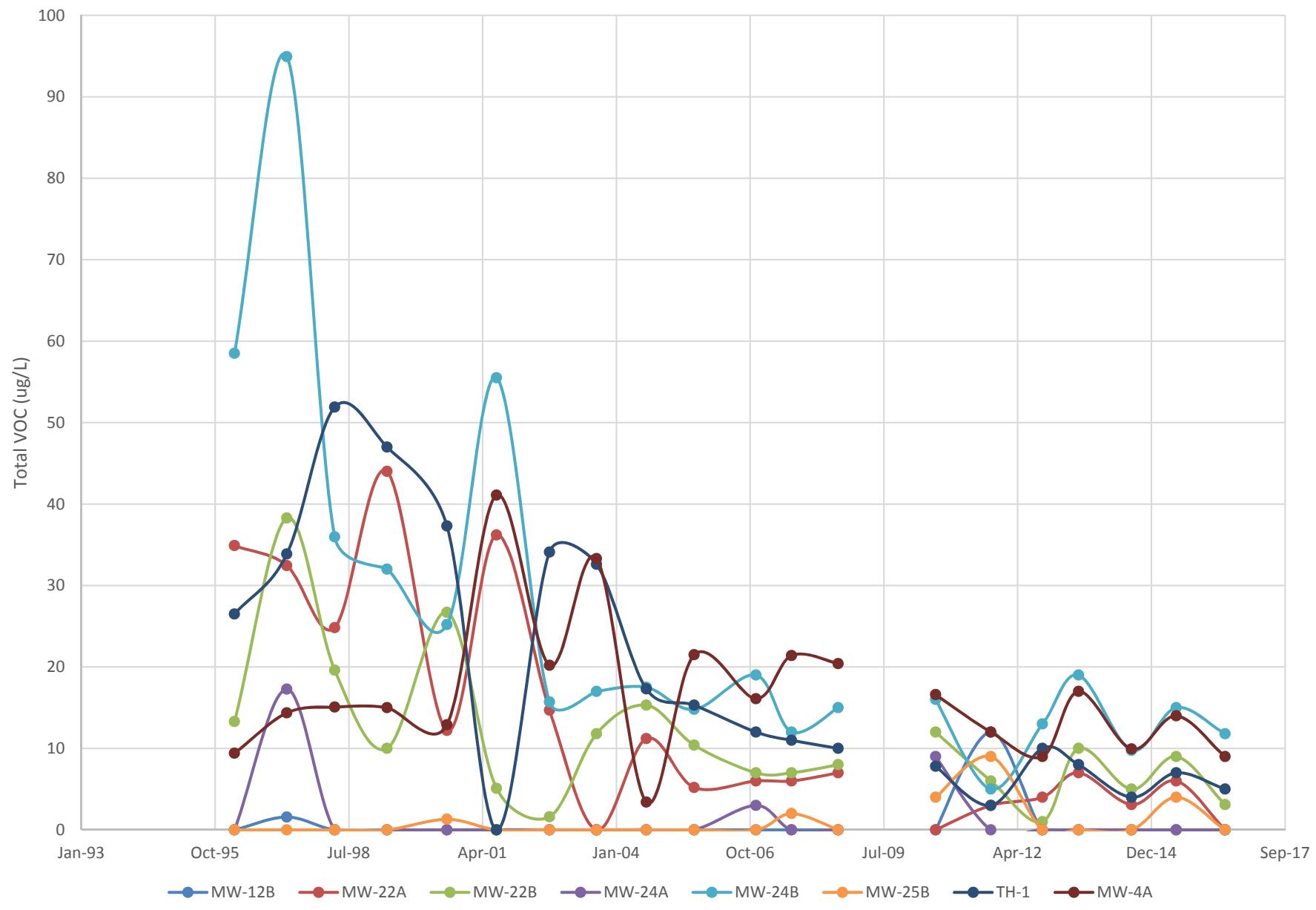


Figure D-14 - Historical Results of Groundwater Elevation in Up-gradient Monitoring Wells

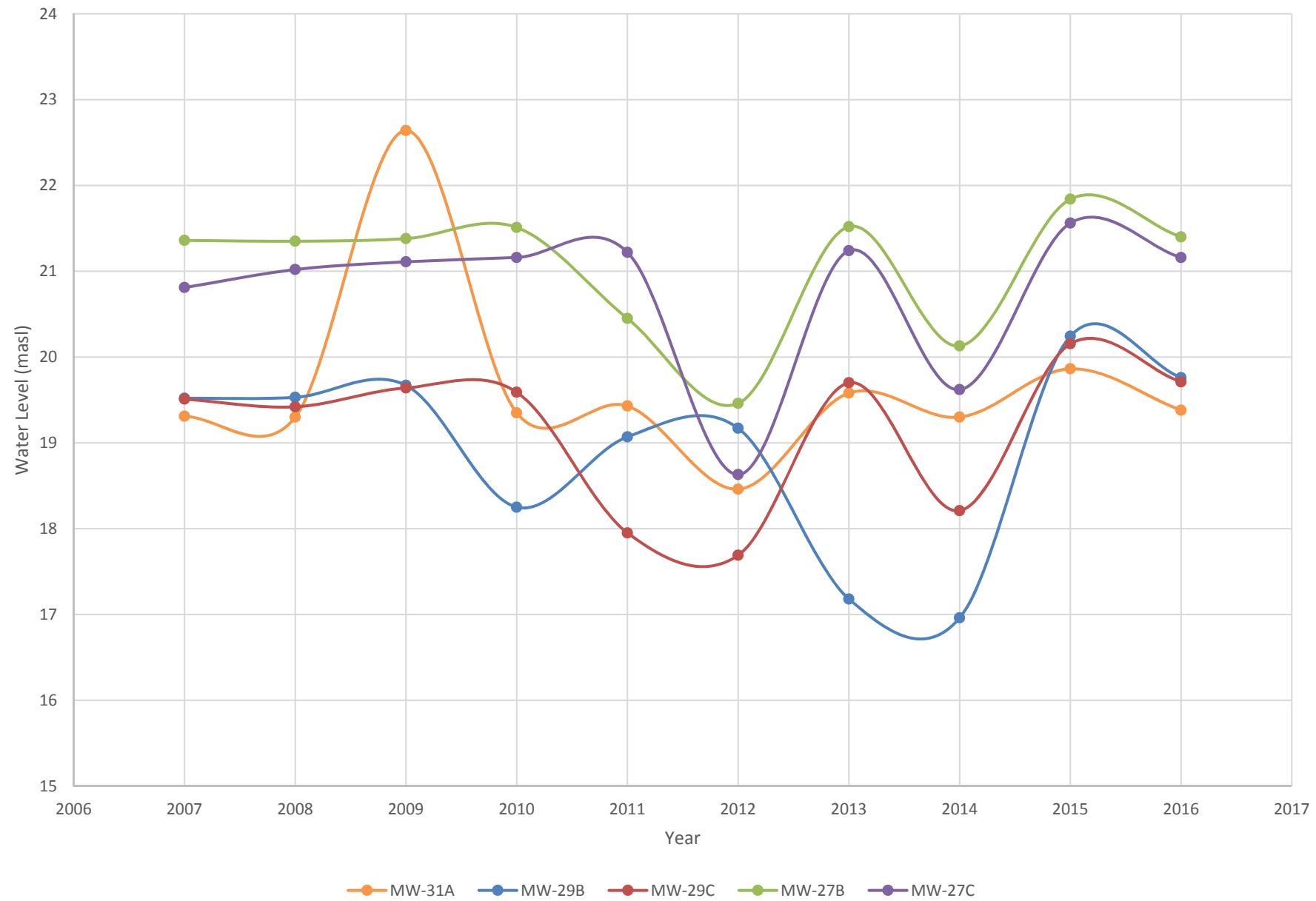


Figure D-15 - Historical Results of Groundwater Elevation in Down-gradient Monitoring Wells

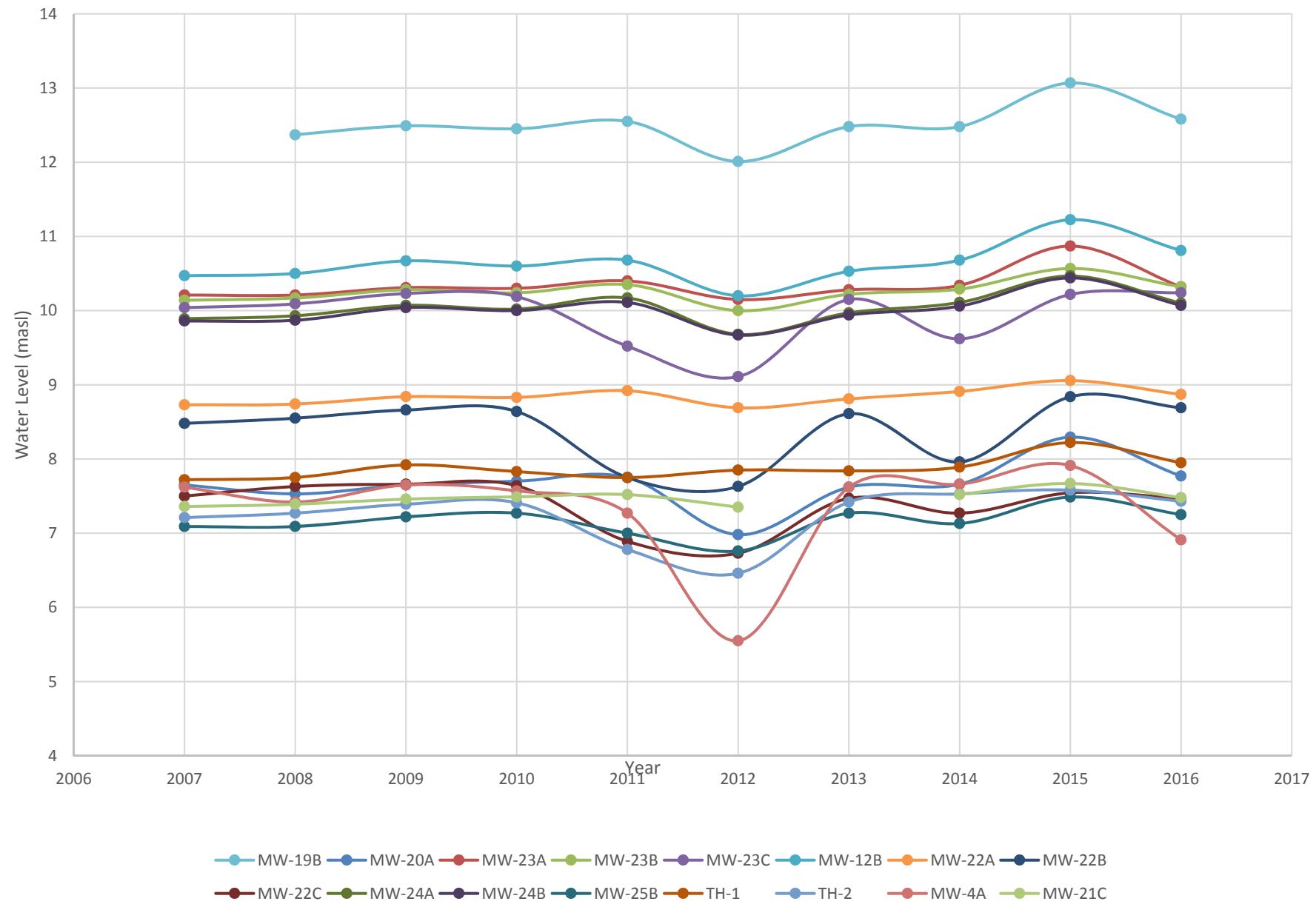


Figure D-16 - Historical Results of Iron in Surface Water Site SW7

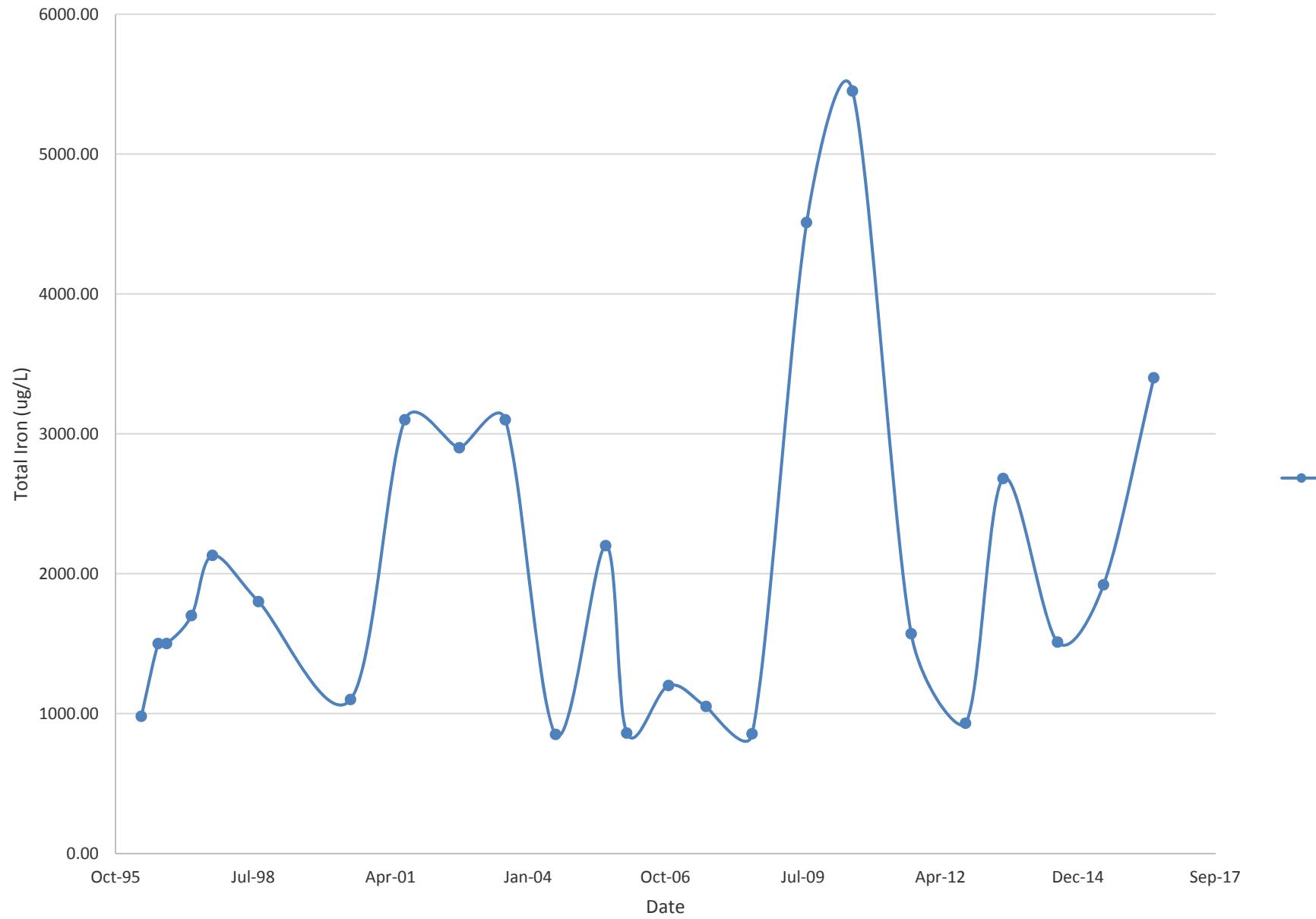


Figure D-17 - Historical Results of Aluminum in Surface Water Site SW7

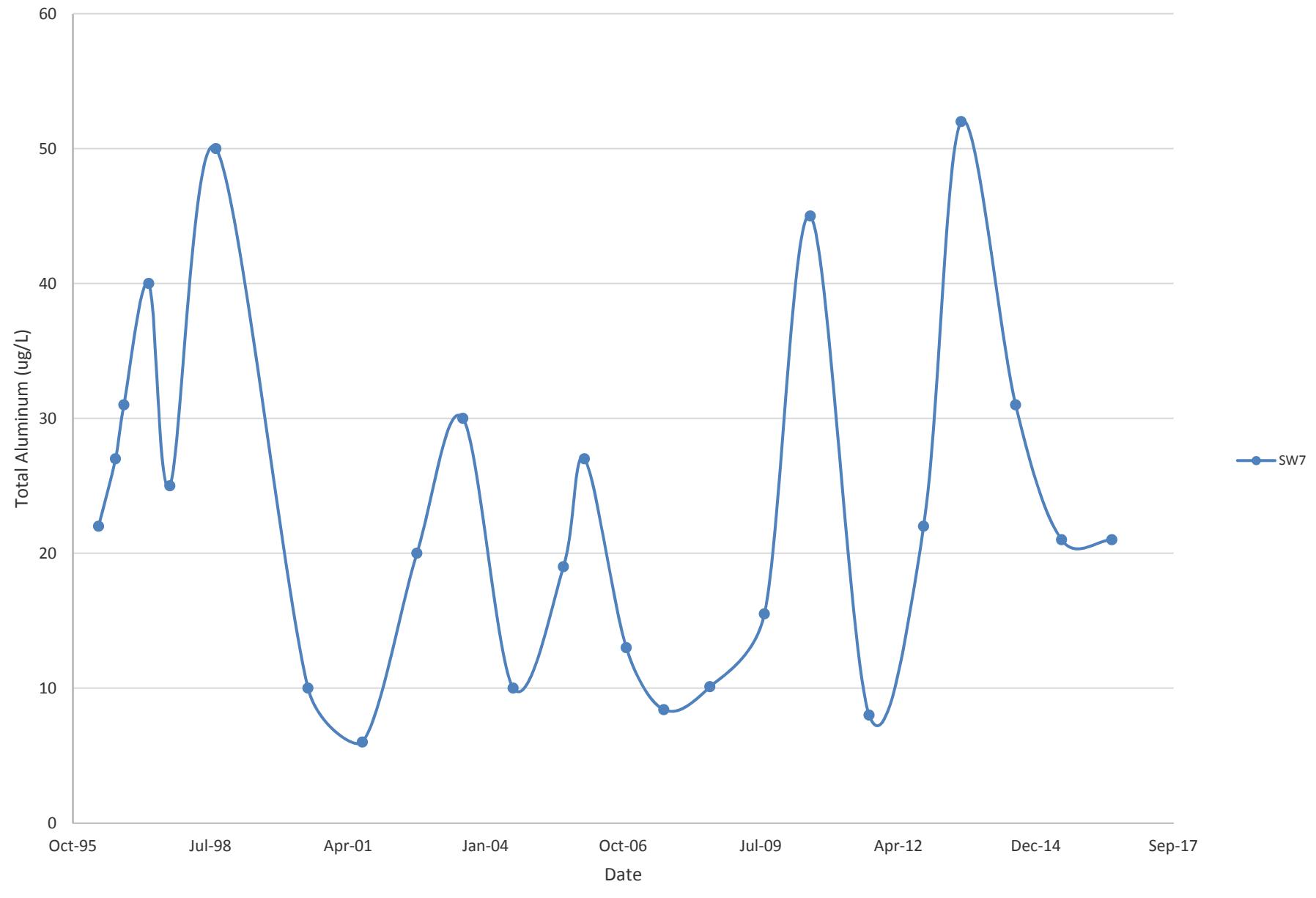


Figure D-18 - Historical Results of Chloride in Surface Water Site SW7

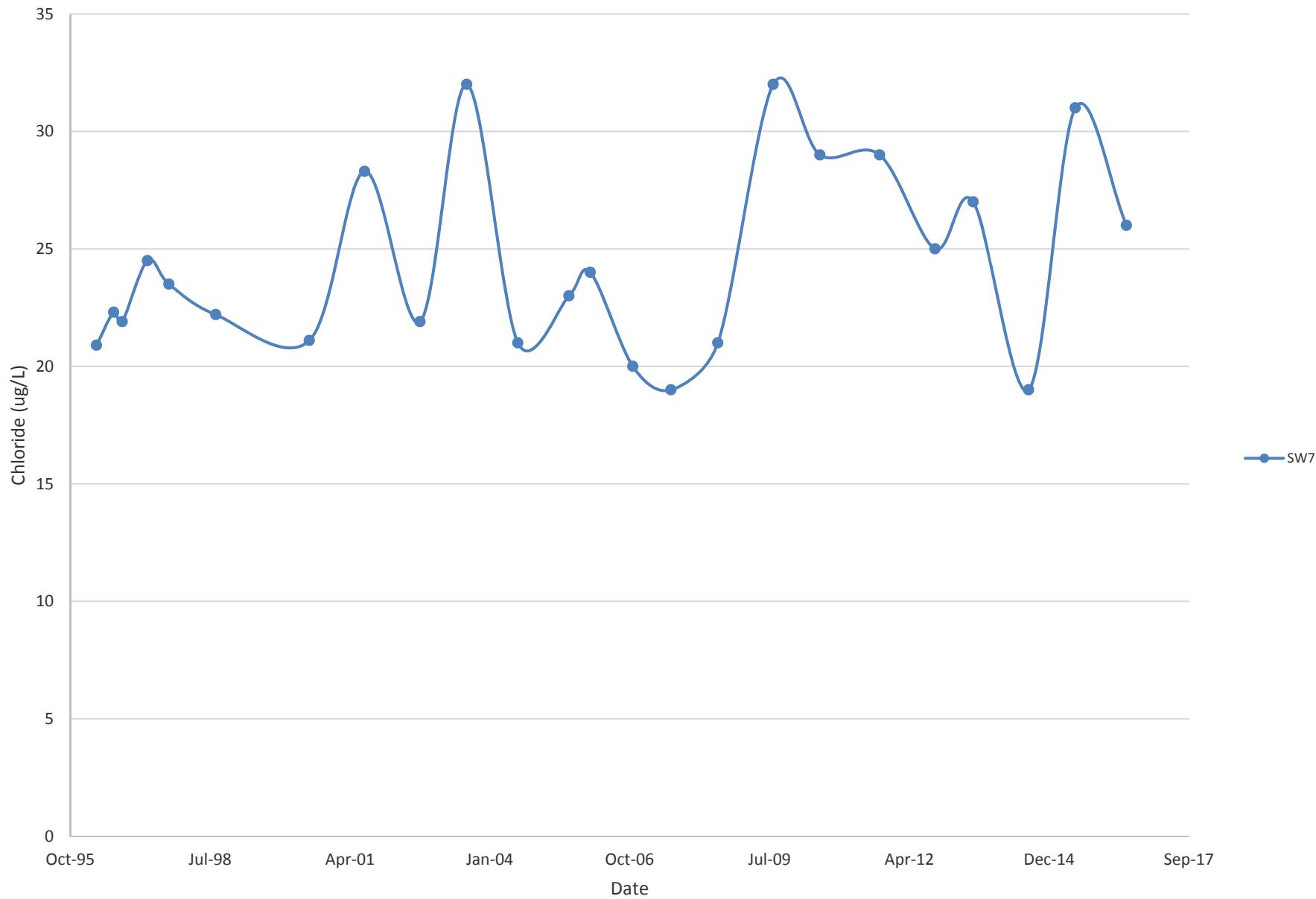
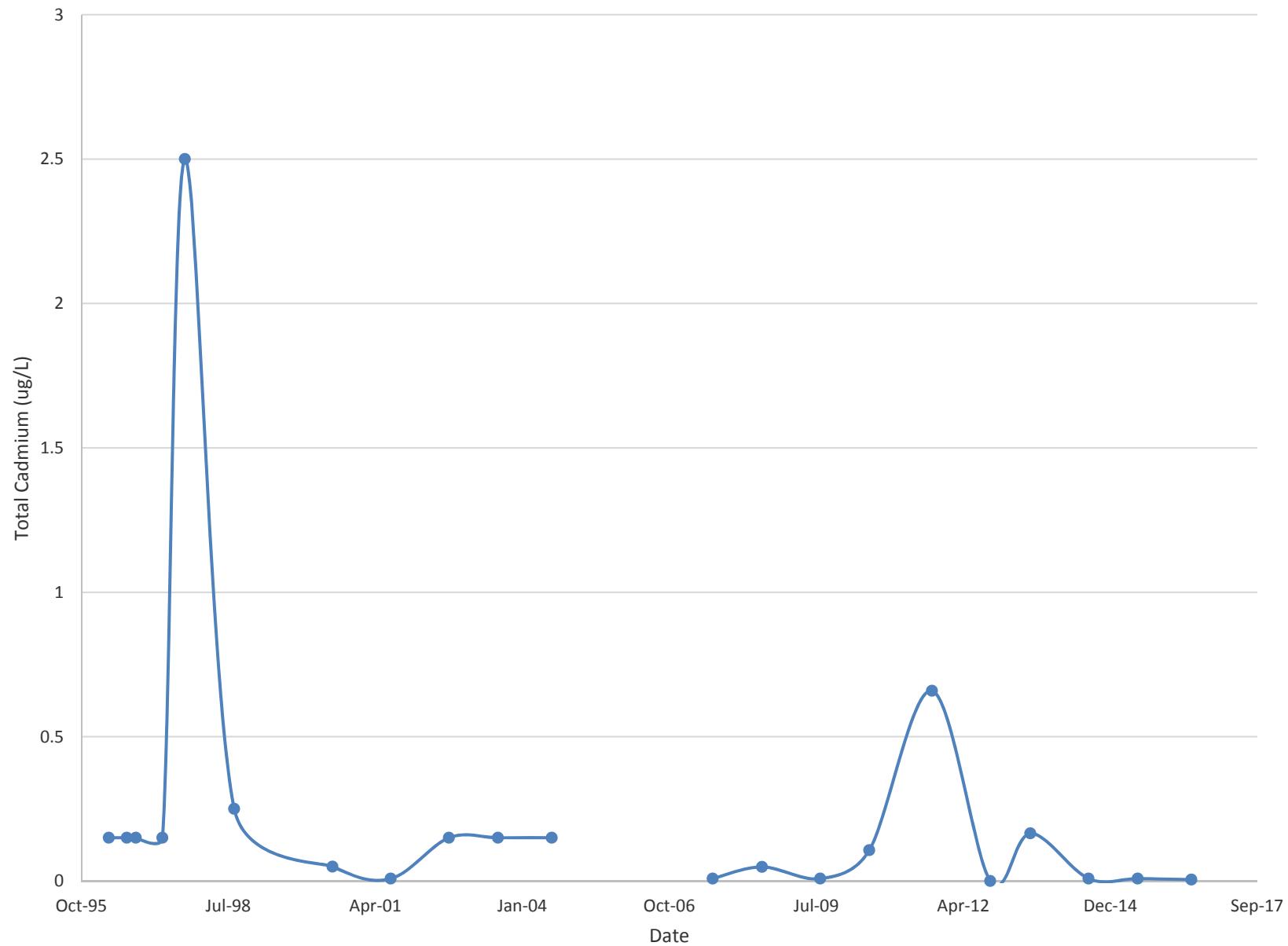


Figure D-19 - Historical Results of Cadmium in Surface Water Site SW7



Appendix E
Fish And Benthic Invertebrate Data

Figure E-1 - Total Number of Fish Caught at Monitoring Sites 2014-2016

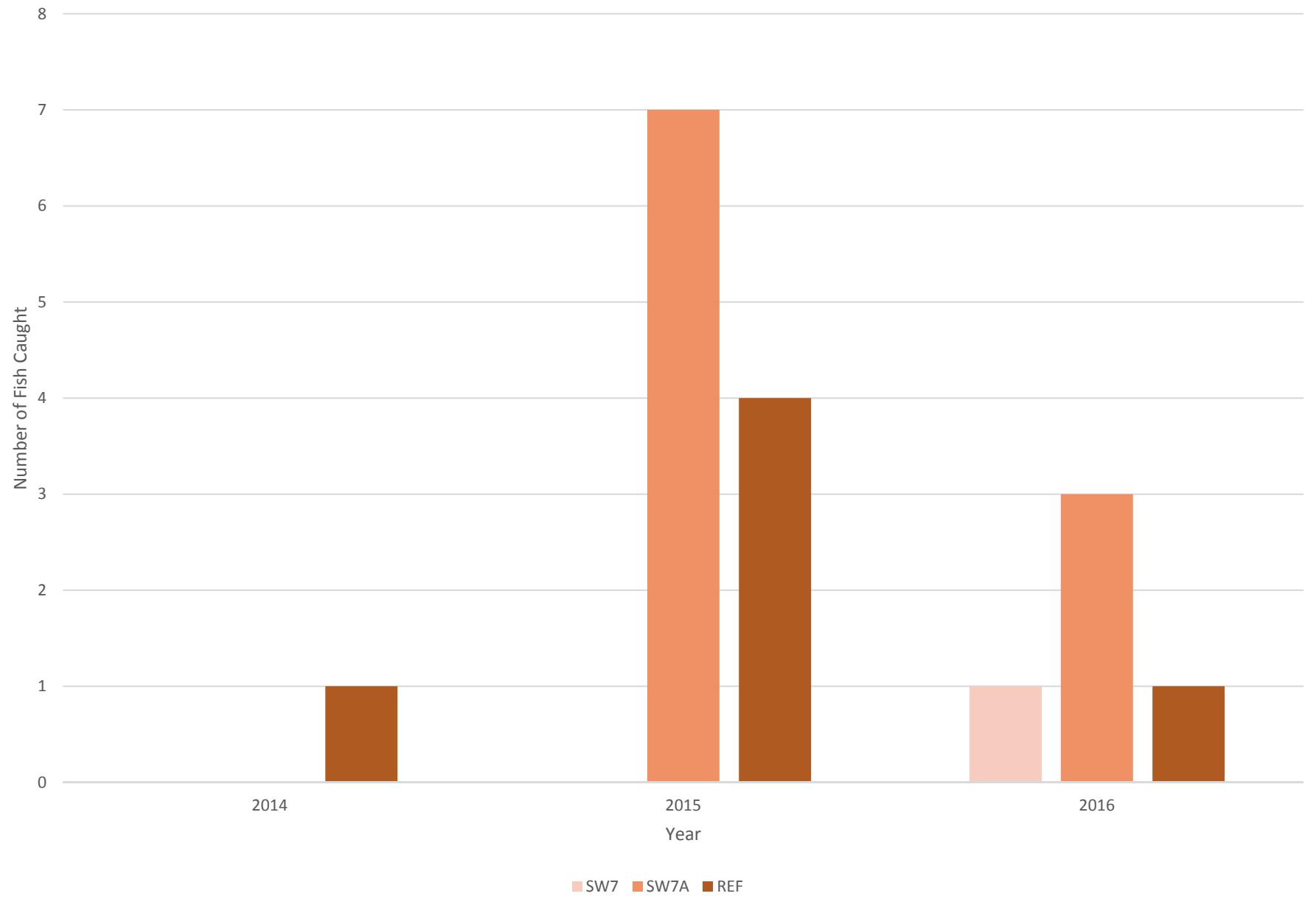


Figure E-2 - Diptera to EPT as a Ratio 2014-2016

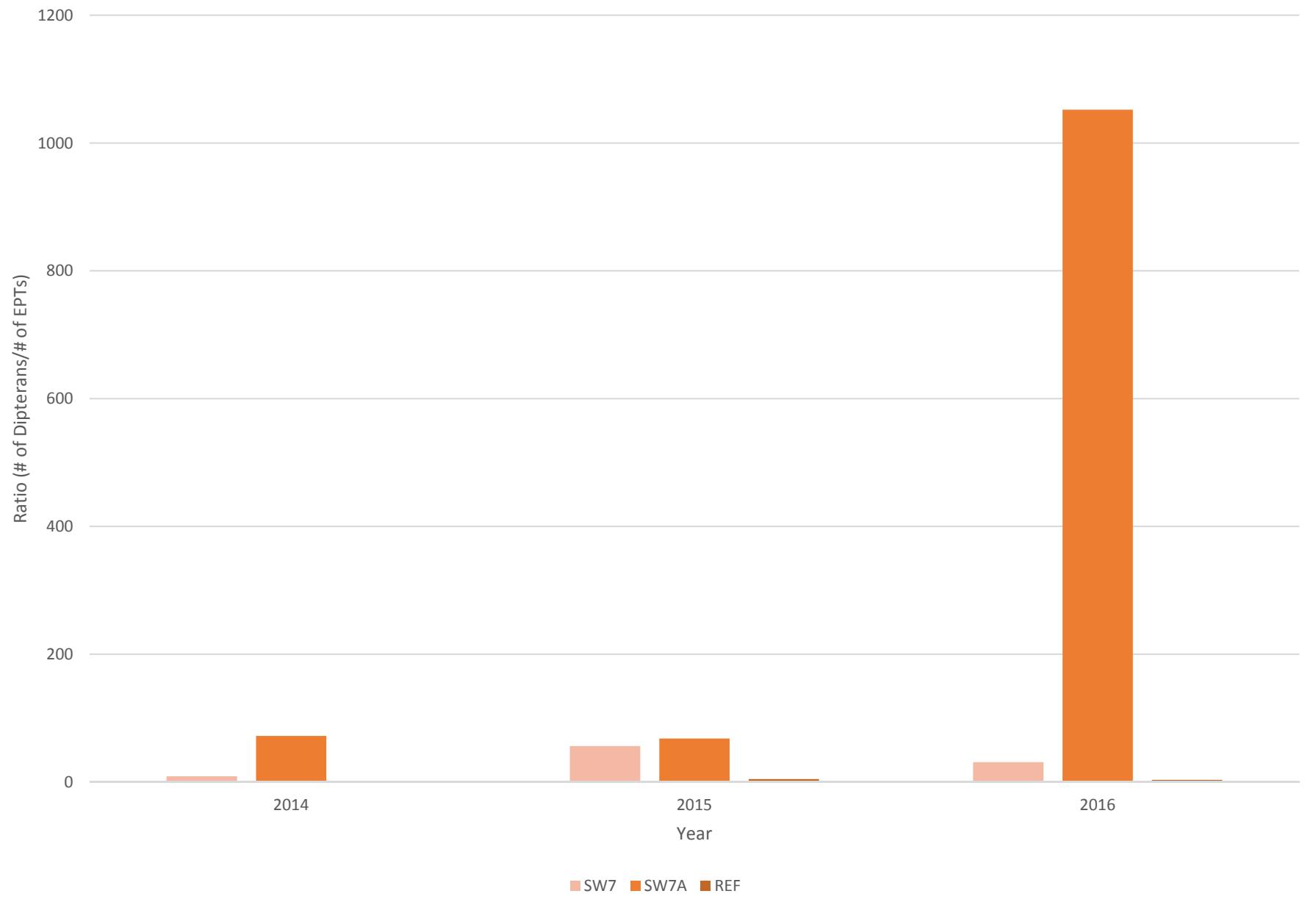


Figure E-3 - Abundance of Benthic Macroinvertebrates Sampled, 2014-2016

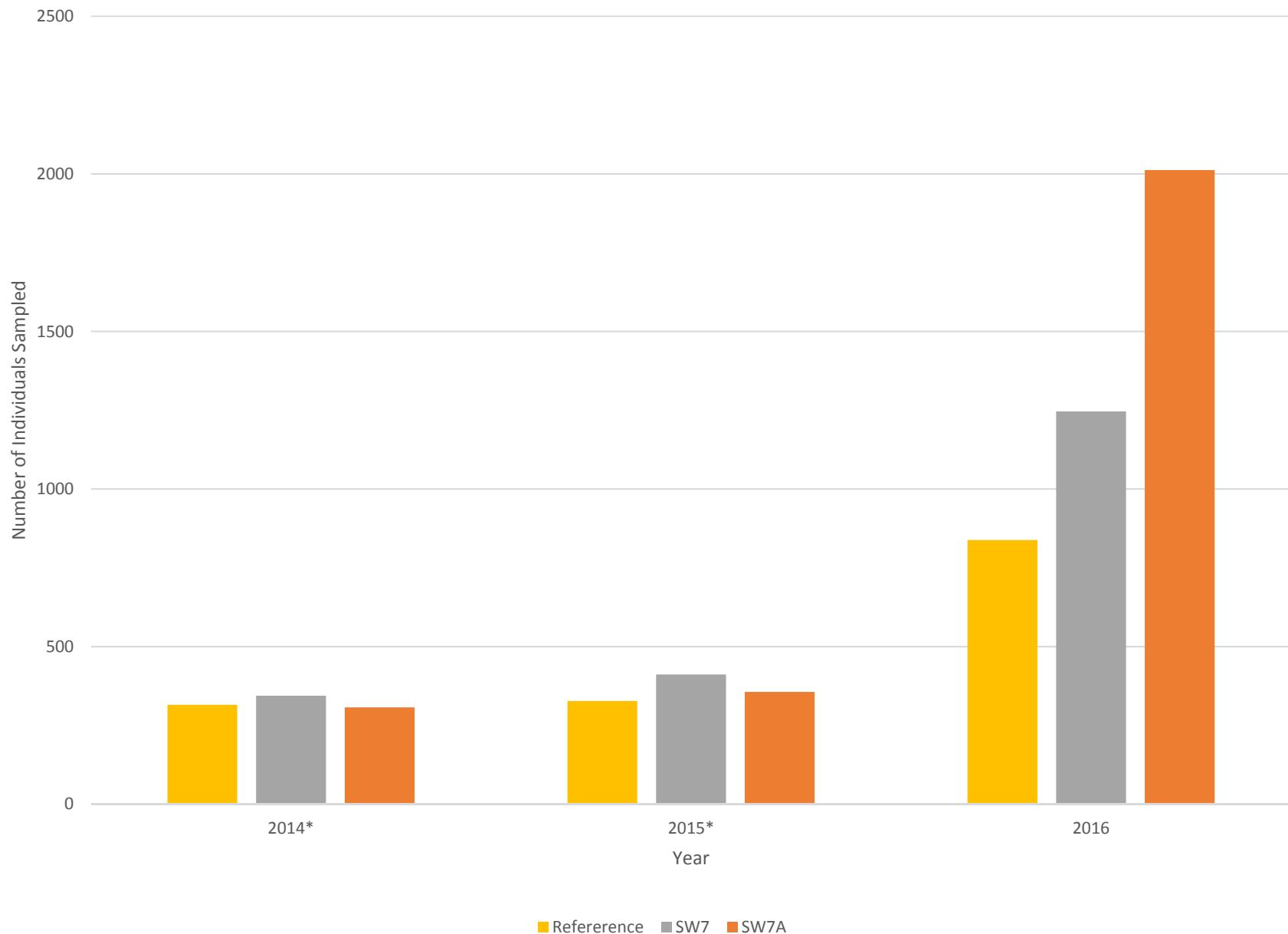


Table E-1 Summary of Water Quality Measurements at the Fish Habitat Sampling Sites

	SW7	SW7A	Reference	
Time (24 hr) on July 14	9:00	9:20	8:30	N/A
Water Temperature (°C)	13.44	13.36	12	Thermal additions to receiving waters should be such that short-term exposure to maximum temperature is not exceeded, while long-term exposures should not exceed maximum weekly average temperatures.
pH (pH units)	7.09	7.08	6.58	6.5-9.0
Dissolved Oxygen (mg/L)	5.79	3.56	9.17	Lowest acceptable dissolved oxygen concentration: for warm water biota: early life stages = 6 mg/L, for warm water biota: other life stages = 5.5 mg/L ,for cold water biota: early life stages = 9.5 mg/L, for cold water biota: other life stages = 6.5 mg/L
Conductivity (mS/cm)	0.541	0.352	0.089	No Data
Total Dissolved Solids (g/L)	0.451	0.294	0.075	No Data
Fish Habitat Potential	Slow flows and elevated organic deposition levels almost entirely envelope the stream bed in this part of the tributary, limiting viability as fish habitat.	Slow flows and elevated organic deposition levels almost entirely envelope the stream bed in this part of the tributary, limiting viability as fish habitat.	Gravel/cobble substrate and permanent flow indicate high potential for fish habitat	N/A
Notes				

Table E-2 Sampling Information for Fish Traps

Minnow Trap Site	Trap Number (Y)	Start Time (July 14, 2016)	End Time (July 15, 2016)	Total Time in Minutes and Hours (Z)	Total Fish Caught in Trap (X)	Catch per Unit Effort (Fish per trap per hour) = X/Y/Z
SW7	SW7-a	9:00	11:05	1565 (26.10)	1	0.04
	SW7-b	9:00	11:15	1575 (26.25)	0	0
SW7A	SW7A-a	9:20	11:30	1570 (26.20)	3	0.11
	SW7A-b	9:20	11:30	1570 (26.20)	4	0.15
Reference (Black Brook)	REF-a	8:30	9:55	1555 (25.9)	1	0.04
	REF-b	8:30	10:06	1566 (26.1)	0	0

Table E-3 Summary of Fish Captures

Site	Trap I.D.	Species Caught	Number Caught (2014)	Number Caught (2015)	Number Caught (2016)	Comments (2016 Lengths)
SW7	a	<i>Gasterosteus</i> sp.	0	0	1	48 mm
	b	-	0	0	0	
SW7A	a	<i>Gasterosteus</i> sp.	0	7	3	50, 59, 62 mm
		Nine-spine stickleback	1	0	0	
	b	<i>Gasterosteus</i> sp.	0	5	4	53, 55, 59, 61 mm
REF	a	<i>Gasterosteus</i> sp.	1	4	1	58 mm
		Brook Trout	2	0	0	
		White-nosed sucker	1	0	0	
	b	<i>Gasterosteus</i> sp.	2	5	0	
Brook Trout			1	1	0	
Total Individuals Caught			8	22	9	
Total Number of Species Caught			4	2	1	Despite only individuals of genera <i>Gasterosteus</i> being caught, 2 brook trout were caught during benthic sampling at REF site.

* denotes data from previous assessments as presented in WSP 2014,2015

Table E-4 Summary of benthic macroinvertebrates (BMI) sampled (2014-2016)

Taxa	Reference				SW7				SW7A			
	2014*	2015*	2016	Mean	2014*	2015*	2016	Mean	2014*	2015*	2016	Mean
	2014*	2015*	2016	Mean	2014*	2015*	2016	Mean	2014*	2015*	2016	Mean
Acariformes (Acarina)	20	20	0	13	2	1	0	1	2	-	0	1
Amphipoda	11	10	144	55	2	2	2	2	-	-	0	0
Bivalvia	3	6	0	3	37	11	0	16	-	1	0	1
Coelenterata	7	6	0	4	-	1	0	1	-	1	0	1
Coleoptera	1	-	14	8	-	-	14	14	-	-	4	4
Collembola	1	2	0	1	-	-	22	22	-	-	8	8
Copepoda	6	13	10	10	38	18	8	21	23	15	36	25
Diptera	157	209	354	240	203	225	682	370	144	68	1052	421
Ephemeroptera	83	31	10	41	23	4	18	15	1	-	0	1
Eulamellibranchia	-	-	0	0	-	-	0	0	-	-	0	0
Gastropoda	4	-	4	4	2	-	0	1	1	-	0	1
Hemiptera	-	-	8	8	-	-	2	2	-	-	0	0
Hirudinea	-	1	4	3	-	-	0	0	-	-	0	0
Hydrachnidia	-	-	144	144	-	-	4	4	-	-	20	20
Megaloptera	-	1	2	2	3	5	70	26	4	5	164	58
Nematoda	8	6	0	5	5	2	10	6	1	2	0	1
Odonata	1		2	2	-	-	0	0	-	-	0	0
Oligochaeta	5	3	10	6	15	102	86	68	62	213	328	201
Ostracoda	-	3	0	2	14	40	126	60	68	51	128	82
Other	-	-	4	4	-	-	2	2	-	-	0	0
Plecoptera	2	4	84	30	-	-	0	0	-	-	0	0
Sphaeriidae	-	-	24	24	-	-	196	196	-	-	272	272
Trichoptera	6	12	20	13	-	-	4	4	1	-	0	1
Abundance (total # of organisms)	315	327	838	493	344	411	1246	667	307	356	2012	892
% EPT	29	14	14	19	7	1	2	3	1	-	0	0
% Diptera	50	64	42	52	59	55	55	56	47	19	52	39
Taxon Richness (# of taxa)	26	28	29	28	14	16	26	19	15	9	16	13

* denotes data from previous assessments as presented in WSP 2014,2015

Table E-5 Complete WQM Measurements at Fish Habitat Sampling Sites

Date	Time	Site	Water Temperature (°C)	pH (pH units)	pH (mV)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	Total Dissolved Solids (TDS) (g/L)	Conductivity (ms/cm)	Oxygen-reduction Potential (ORP) (mV)
14-Jul-16	9:00	SW7	13.44	7.09	-10.4	5.79	55.9	0.451	0.541	-146.5
14-Jul-16	9:20	SW7A	13.36	7.08	-10.2	3.56	38.7	0.294	0.352	-162
14-Jul-16	8:30	REF	12	6.58	15.9	9.17	87	0.075	0.089	45.8

Appendix F Lab Certificates

Your Project #: 121414186
Site Location: MEADOWVIEW

Attention:John Kozuskanich

Stantec Consulting Ltd
40 Highfield Park Drive
Suite 102
Dartmouth, NS
B3A 0A3

Your C.O.C. #: 569007-01-01, 569007-02-01, 569007-03-01

Report Date: 2016/07/25
Report #: R4080254
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6E7391

Received: 2016/07/15, 10:37

Sample Matrix: Water

Samples Received: 23

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
ABN Compounds in Water by GC/MS (1)	4	2016/07/20	2016/07/22	CAM SOP-00301	EPA 8270 m
Carbonate, Bicarbonate and Hydroxide	23	N/A	2016/07/19	N/A	SM 22 4500-CO2 D
Alkalinity	1	N/A	2016/07/21	ATL SOP 00013	EPA 310.2 R1974 m
Alkalinity	22	N/A	2016/07/22	ATL SOP 00013	EPA 310.2 R1974 m
Chloride	23	N/A	2016/07/22	ATL SOP 00014	SM 22 4500-Cl- E m
Colour	23	N/A	2016/07/21	ATL SOP 00020	SM 22 2120C m
Conductance - water	23	N/A	2016/07/19	ATL SOP 00004	SM 22 2510B m
TEH in Water (PIRI)	8	2016/07/19	2016/07/19	ATL SOP 00113	Atl. RBCA v3 m
TEH in Water (PIRI)	1	2016/07/19	2016/07/20	ATL SOP 00113	Atl. RBCA v3 m
Hardness (calculated as CaCO ₃)	10	N/A	2016/07/21	ATL SOP 00048	SM 22 2340 B
Hardness (calculated as CaCO ₃)	13	N/A	2016/07/22	ATL SOP 00048	SM 22 2340 B
Metals Water Diss. MS (as rec'd)	21	N/A	2016/07/21	ATL SOP 00058	EPA 6020A R1 m
Metals Water Diss. MS (as rec'd)	1	N/A	2016/07/22	ATL SOP 00058	EPA 6020A R1 m
Metals Water Total MS	1	2016/07/19	2016/07/21	ATL SOP 00058	EPA 6020A R1 m
Ion Balance (% Difference)	23	N/A	2016/07/22		Auto Calc.
Anion and Cation Sum	23	N/A	2016/07/22		Auto Calc.
Nitrogen Ammonia - water	7	N/A	2016/07/21	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen Ammonia - water	16	N/A	2016/07/22	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	23	N/A	2016/07/22	ATL SOP 00016	USGS SOPINCF0452.2 m
Nitrogen - Nitrite	21	N/A	2016/07/22	ATL SOP 00017	SM 22 4500-NO2- B m
Nitrogen - Nitrate (as N)	21	N/A	2016/07/22	ATL SOP 00018	ASTM D3867
pH (2)	23	N/A	2016/07/19	ATL SOP 00003	SM 22 4500-H+ B m
Phosphorus - ortho	23	N/A	2016/07/22	ATL SOP 00021	EPA 365.2 m
VPH in Water (PIRI)	9	N/A	2016/07/19	ATL SOP 00118	Atl. RBCA v3 m
Sat. pH and Langelier Index (@ 20C)	23	N/A	2016/07/22	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	23	N/A	2016/07/22	ATL SOP 00049	Auto Calc.
Reactive Silica	2	N/A	2016/07/20	ATL SOP 00022	EPA 366.0 m

Your Project #: 121414186
Site Location: MEADOWVIEW

Attention:John Kozuskanich

Stantec Consulting Ltd
40 Highfield Park Drive
Suite 102
Dartmouth, NS
B3A 0A3

Your C.O.C. #: 569007-01-01, 569007-02-01, 569007-03-01

Report Date: 2016/07/25
Report #: R4080254
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6E7391

Received: 2016/07/15, 10:37

Sample Matrix: Water

Samples Received: 23

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Reactive Silica	21	N/A	2016/07/21	ATL SOP 00022	EPA 366.0 m
Sulphate	23	N/A	2016/07/22	ATL SOP 00023	ASTMD516-11 m
Total Dissolved Solids (TDS calc)	23	N/A	2016/07/22		Auto Calc.
Organic carbon - Total (TOC) (3)	23	N/A	2016/07/21	ATL SOP 00037	SM 22 5310C m
ModTPH (T1) Calc. for Water	9	N/A	2016/07/20	N/A	Atl. RBCA v3 m
Turbidity	6	N/A	2016/07/19	ATL SOP 00011	EPA 180.1 R2 m
Turbidity	17	N/A	2016/07/20	ATL SOP 00011	EPA 180.1 R2 m
Volatile Organic Compounds in Water	9	N/A	2016/07/19	ATL SOP 00133	EPA 8260C R3 m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga

(2) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.

(3) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Marie Muise, Project Manager

Email: MMuise@maxxam.ca

Phone# (902)420-0203 Ext:253

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		CSE682	CSE686	CSE687	CSE715	CSE716	CSE717		
Sampling Date		2016/07/14	2016/07/14	2016/07/14	2016/07/13	2016/07/13	2016/07/14		
COC Number		569007-01-01	569007-01-01	569007-01-01	569007-02-01	569007-02-01	569007-02-01		
	UNITS	MW-12B	MW-22A	MW-22B	MW-24A	MW-24B	MW-25B	RDL	QC Batch
Petroleum Hydrocarbons									
Benzene	mg/L	<0.0010	<0.0010	0.0015	<0.0010	0.0031	<0.0010	0.0010	4582802
Toluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	4582802
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	4582802
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	4582802
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4582802
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	<0.050	0.083	<0.050	0.050	4583926
>C16-C21 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4583926
>C21-<C32 Hydrocarbons	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4583926
Modified TPH (Tier1)	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4579816
Reached Baseline at C32	mg/L	NA	NA	NA	NA	Yes	NA	N/A	4583926
Hydrocarbon Resemblance	mg/L	NA	NA	NA	NA	NA	NA	N/A	4583926
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	92	105	99	104	110	103	N/A	4583926
n-Dotriacontane - Extractable	%	88	97	95	92	100	101	N/A	4583926
Isobutylbenzene - Volatile	%	98	101	96	98	95	100	N/A	4582802
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
N/A = Not Applicable									

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		CSE723			CSE724		CSE787		
Sampling Date		2016/07/14			2016/07/14		2016/07/14		
COC Number		569007-02-01			569007-02-01		569007-03-01		
	UNITS	MW-4A	RDL	QC Batch	TH-1	RDL	MW-40D (dup)	RDL	QC Batch

Petroleum Hydrocarbons

Benzene	mg/L	0.0018	0.0010	4582802	<0.0010	0.0010	<0.0010	0.0010	4582802
Toluene	mg/L	<0.0010	0.0010	4582802	<0.0010	0.0010	<0.0010	0.0010	4582802
Ethylbenzene	mg/L	<0.0010	0.0010	4582802	<0.0010	0.0010	<0.0010	0.0010	4582802
Total Xylenes	mg/L	<0.0020	0.0020	4582802	<0.0020	0.0020	<0.0020	0.0020	4582802
C6 - C10 (less BTEX)	mg/L	<0.010	0.010	4582802	<0.010	0.010	<0.010	0.010	4582802
>C10-C16 Hydrocarbons	mg/L	0.052	0.050	4583926	<0.057 (1)	0.057	<0.050	0.050	4583926
>C16-C21 Hydrocarbons	mg/L	<0.050	0.050	4583926	<0.057 (1)	0.057	<0.050	0.050	4583926
>C21-<C32 Hydrocarbons	mg/L	<0.10	0.10	4583926	<0.11 (1)	0.11	<0.10	0.10	4583926
Modified TPH (Tier1)	mg/L	<0.10	0.10	4579816	<0.11	0.11	<0.10	0.10	4580739
Reached Baseline at C32	mg/L	Yes	N/A	4583926	NA	N/A	NA	N/A	4583926
Hydrocarbon Resemblance	mg/L	NA	N/A	4583926	NA	N/A	NA	N/A	4583926

Surrogate Recovery (%)

Isobutylbenzene - Extractable	%	101	N/A	4583926	114	N/A	87	N/A	4583926
n-Dotriaccontane - Extractable	%	101 (2)	N/A	4583926	112	N/A	104	N/A	4583926
Isobutylbenzene - Volatile	%	96	N/A	4582802	99	N/A	96	N/A	4582802

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Elevated TEH RDL(s) due to limited sample.

(2) TEH sample contained sediment.

Maxxam Job #: B6E7391

Report Date: 2016/07/25

Stantec Consulting Ltd

Client Project #: 121414186

Site Location: MEADOWVIEW

Sampler Initials: MP

ATL RCAP 30 DISSOLVED (FIELD FILT) IN W

Maxxam ID		CSE718			CSE719		
Sampling Date		2016/07/13			2016/07/13		
COC Number		569007-02-01			569007-02-01		
	UNITS	MW-27B	RDL	QC Batch	MW-27C	RDL	QC Batch
Calculated Parameters							
Anion Sum	me/L	1.73	N/A	4580583	2.06	N/A	4580734
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	75	1.0	4580579	94	1.0	4580730
Calculated TDS	mg/L	100	1.0	4580589	120	1.0	4580738
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.3	1.0	4580579	1.9	1.0	4580730
Cation Sum	me/L	1.52	N/A	4580583	2.09	N/A	4580734
Hardness (CaCO3)	mg/L	15	1.0	4580732	12	1.0	4580732
Ion Balance (% Difference)	%	6.46	N/A	4580582	0.720	N/A	4580733
Langelier Index (@ 20C)	N/A	-0.541	N/A	4580587	-0.448	N/A	4580736
Langelier Index (@ 4C)	N/A	-0.792	N/A	4580588	-0.699	N/A	4580737
Saturation pH (@ 20C)	N/A	8.79	N/A	4580587	8.77	N/A	4580736
Saturation pH (@ 4C)	N/A	9.04	N/A	4580588	9.02	N/A	4580737
Inorganics							
Total Alkalinity (Total as CaCO3)	mg/L	76	5.0	4586401	96	10	4586401
Dissolved Chloride (Cl)	mg/L	4.8	1.0	4586409	4.5	1.0	4586409
Colour	TCU	<5.0	5.0	4586414	<5.0	5.0	4586414
Nitrate + Nitrite (N)	mg/L	0.27	0.050	4586417	0.054	0.050	4586417
Nitrogen (Ammonia Nitrogen)	mg/L	0.067	0.050	4587899	<0.050	0.050	4587899
Total Organic Carbon (C)	mg/L	<5.0 (1)	5.0	4586193	<5.0 (1)	5.0	4586193
Orthophosphate (P)	mg/L	0.020	0.010	4586415	0.017	0.010	4586415
pH	pH	8.25	N/A	4583898	8.33	N/A	4583898
Reactive Silica (SiO2)	mg/L	11	0.50	4586412	6.1	0.50	4586412
Dissolved Sulphate (SO4)	mg/L	2.4	2.0	4586410	<2.0	2.0	4586410
Turbidity	NTU	310	1.0	4585707	34	0.10	4585707
Conductivity	uS/cm	150	1.0	4583900	200	1.0	4583900
Metals							
Dissolved Calcium (Ca)	ug/L	4800	100	4587845	4000	100	4587845
Dissolved Copper (Cu)	ug/L	<2.0	2.0	4587845	2.5	2.0	4587845
Dissolved Iron (Fe)	ug/L	<50	50	4587845	<50	50	4587845
Dissolved Magnesium (Mg)	ug/L	630	100	4587845	510	100	4587845
Dissolved Manganese (Mn)	ug/L	<2.0	2.0	4587845	<2.0	2.0	4587845
Dissolved Potassium (K)	ug/L	3700	100	4587845	3300	100	4587845
Dissolved Sodium (Na)	ug/L	26000	100	4587845	40000	100	4587845
Dissolved Zinc (Zn)	ug/L	7.5	5.0	4587845	6.4	5.0	4587845
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
N/A = Not Applicable							
(1) Reporting limit was increased due to turbidity.							

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Maxxam ID		CSE789		
Sampling Date		2016/07/14		
COC Number		569007-03-01		
	UNITS	SW7	RDL	QC Batch
Calculated Parameters				
Anion Sum	me/L	2.52	N/A	4580734
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	85	1.0	4580730
Calculated TDS	mg/L	150	1.0	4580738
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	<1.0	1.0	4580730
Cation Sum	me/L	2.44	N/A	4580734
Hardness (CaCO ₃)	mg/L	76	1.0	4580732
Ion Balance (% Difference)	%	1.61	N/A	4580733
Langelier Index (@ 20C)	N/A	-0.790	N/A	4580736
Langelier Index (@ 4C)	N/A	-1.04	N/A	4580737
Nitrate (N)	mg/L	0.16	0.050	4580735
Saturation pH (@ 20C)	N/A	8.04	N/A	4580736
Saturation pH (@ 4C)	N/A	8.29	N/A	4580737
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L	85	5.0	4586424
Dissolved Chloride (Cl)	mg/L	26	1.0	4586426
Colour	TCU	46	5.0	4586439
Nitrate + Nitrite (N)	mg/L	0.16	0.050	4586447
Nitrite (N)	mg/L	<0.010	0.010	4586455
Nitrogen (Ammonia Nitrogen)	mg/L	1.2	0.050	4587902
Total Organic Carbon (C)	mg/L	2.9	0.50	4586193
Orthophosphate (P)	mg/L	0.017	0.010	4586445
pH	pH	7.25	N/A	4583894
Reactive Silica (SiO ₂)	mg/L	11	0.50	4586433
Dissolved Sulphate (SO ₄)	mg/L	3.7	2.0	4586428
Turbidity	NTU	11	0.10	4585707
Conductivity	uS/cm	240	1.0	4583896
Metals				
Total Aluminum (Al)	ug/L	21	5.0	4583897
Total Antimony (Sb)	ug/L	<1.0	1.0	4583897
Total Arsenic (As)	ug/L	3.1	1.0	4583897
Total Barium (Ba)	ug/L	250	1.0	4583897
Total Beryllium (Be)	ug/L	<1.0	1.0	4583897
Total Bismuth (Bi)	ug/L	<2.0	2.0	4583897
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				
N/A = Not Applicable				

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Maxxam ID		CSE789		
Sampling Date		2016/07/14		
COC Number		569007-03-01		
	UNITS	SW7	RDL	QC Batch
Total Boron (B)	ug/L	<50	50	4583897
Total Cadmium (Cd)	ug/L	<0.010	0.010	4583897
Total Calcium (Ca)	ug/L	25000	100	4583897
Total Chromium (Cr)	ug/L	1.9	1.0	4583897
Total Cobalt (Co)	ug/L	1.2	0.40	4583897
Total Copper (Cu)	ug/L	<2.0	2.0	4583897
Total Iron (Fe)	ug/L	3400	50	4583897
Total Lead (Pb)	ug/L	<0.50	0.50	4583897
Total Magnesium (Mg)	ug/L	3200	100	4583897
Total Manganese (Mn)	ug/L	2400	2.0	4583897
Total Molybdenum (Mo)	ug/L	<2.0	2.0	4583897
Total Nickel (Ni)	ug/L	<2.0	2.0	4583897
Total Phosphorus (P)	ug/L	<100	100	4583897
Total Potassium (K)	ug/L	2700	100	4583897
Total Selenium (Se)	ug/L	<1.0	1.0	4583897
Total Silver (Ag)	ug/L	<0.10	0.10	4583897
Total Sodium (Na)	ug/L	15000	100	4583897
Total Strontium (Sr)	ug/L	61	2.0	4583897
Total Thallium (Tl)	ug/L	<0.10	0.10	4583897
Total Tin (Sn)	ug/L	<2.0	2.0	4583897
Total Titanium (Ti)	ug/L	<2.0	2.0	4583897
Total Uranium (U)	ug/L	<0.10	0.10	4583897
Total Vanadium (V)	ug/L	<2.0	2.0	4583897
Total Zinc (Zn)	ug/L	<5.0	5.0	4583897
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE682		CSE683		CSE684				
Sampling Date		2016/07/14		2016/07/13		2016/07/13				
COC Number		569007-01-01		569007-01-01		569007-01-01				
	UNITS	MW-12B	RDL	QC Batch	MW-19B	RDL	QC Batch	MW-20A	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	1.38	N/A	4580583	2.00	N/A	4580583	1.76	N/A	4580583
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	35	1.0	4580579	40	1.0	4580579	24	1.0	4580579
Calculated TDS	mg/L	93	1.0	4580589	120	1.0	4580589	110	1.0	4580589
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	<1.0	1.0	4580579	<1.0	1.0	4580579	<1.0	1.0	4580579
Cation Sum	me/L	1.35	N/A	4580583	1.80	N/A	4580583	1.75	N/A	4580583
Hardness (CaCO ₃)	mg/L	39	1.0	4580581	61	1.0	4580581	49	1.0	4580581
Ion Balance (% Difference)	%	1.10	N/A	4580582	5.26	N/A	4580582	0.280	N/A	4580582
Langelier Index (@ 20C)	N/A	-1.35	N/A	4580587	-0.666	N/A	4580587	-1.38	N/A	4580587
Langelier Index (@ 4C)	N/A	-1.61	N/A	4580588	-0.917	N/A	4580588	-1.64	N/A	4580588
Nitrate (N)	mg/L	<0.050	0.050	4580585	2.0	0.050	4580585	0.32	0.050	4580585
Saturation pH (@ 20C)	N/A	8.66	N/A	4580587	8.44	N/A	4580587	8.74	N/A	4580587
Saturation pH (@ 4C)	N/A	8.91	N/A	4580588	8.69	N/A	4580588	8.99	N/A	4580588

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	35	5.0	4586401	40	5.0	4586401	24	5.0	4586401
Dissolved Chloride (Cl)	mg/L	20	1.0	4586409	33	1.0	4586409	41	1.0	4586409
Colour	TCU	22	5.0	4586414	<5.0	5.0	4586414	<5.0	5.0	4586414
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	4586417	2.0	0.050	4586417	0.32	0.050	4586417
Nitrite (N)	mg/L	<0.010	0.010	4586419	<0.010	0.010	4586419	<0.010	0.010	4586419
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	4587899	<0.050	0.050	4587899	0.15	0.050	4587899
Total Organic Carbon (C)	mg/L	0.67	0.50	4585973	<5.0 (1)	5.0	4585973	<0.50	0.50	4585973
Orthophosphate (P)	mg/L	0.016	0.010	4586415	0.036	0.010	4586415	0.010	0.010	4586415
pH	pH	7.31	N/A	4583898	7.78	N/A	4583908	7.36	N/A	4583904
Reactive Silica (SiO ₂)	mg/L	13	0.50	4586412	10	0.50	4586412	5.7	0.50	4586412
Dissolved Sulphate (SO ₄)	mg/L	5.8	2.0	4586410	5.4	2.0	4586410	5.0	2.0	4586410
Turbidity	NTU	78	0.10	4585707	360	1.0	4585707	21	0.10	4585707
Conductivity	uS/cm	140	1.0	4583900	200	1.0	4583910	180	1.0	4583907

Metals

Dissolved Aluminum (Al)	ug/L	<5.0	5.0	4583977	<5.0	5.0	4583977	<5.0	5.0	4583977
Dissolved Antimony (Sb)	ug/L	<1.0	1.0	4583977	<1.0	1.0	4583977	<1.0	1.0	4583977
Dissolved Arsenic (As)	ug/L	7.2	1.0	4583977	1.2	1.0	4583977	<1.0	1.0	4583977
Dissolved Barium (Ba)	ug/L	120	1.0	4583977	1.6	1.0	4583977	120	1.0	4583977
Dissolved Beryllium (Be)	ug/L	<1.0	1.0	4583977	<1.0	1.0	4583977	<1.0	1.0	4583977
Dissolved Bismuth (Bi)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Reporting limit was increased due to turbidity.

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE682			CSE683			CSE684		
Sampling Date		2016/07/14			2016/07/13		<td>2016/07/13</td> <th></th>	2016/07/13		
COC Number		569007-01-01			569007-01-01		<td>569007-01-01</td> <th></th>	569007-01-01		
	UNITS	MW-12B	RDL	QC Batch	MW-19B	RDL	QC Batch	MW-20A	RDL	QC Batch
Dissolved Boron (B)	ug/L	<50	50	4583977	<50	50	4583977	<50	50	4583977
Dissolved Cadmium (Cd)	ug/L	<0.010	0.010	4583977	0.011	0.010	4583977	0.039	0.010	4583977
Dissolved Calcium (Ca)	ug/L	14000	100	4583977	20000	100	4583977	17000	100	4583977
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	4583977	<1.0	1.0	4583977	<1.0	1.0	4583977
Dissolved Cobalt (Co)	ug/L	2.3	0.40	4583977	<0.40	0.40	4583977	<0.40	0.40	4583977
Dissolved Copper (Cu)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977
Dissolved Iron (Fe)	ug/L	5700	50	4583977	<50	50	4583977	1800	50	4583977
Dissolved Lead (Pb)	ug/L	<0.50	0.50	4583977	<0.50	0.50	4583977	<0.50	0.50	4583977
Dissolved Magnesium (Mg)	ug/L	1000	100	4583977	2400	100	4583977	1800	100	4583977
Dissolved Manganese (Mn)	ug/L	4200	2.0	4583977	<2.0	2.0	4583977	150	2.0	4583977
Dissolved Molybdenum (Mo)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977
Dissolved Nickel (Ni)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977
Dissolved Phosphorus (P)	ug/L	<100	100	4583977	<100	100	4583977	<100	100	4583977
Dissolved Potassium (K)	ug/L	890	100	4583977	2900	100	4583977	1400	100	4583977
Dissolved Selenium (Se)	ug/L	<1.0	1.0	4583977	<1.0	1.0	4583977	<1.0	1.0	4583977
Dissolved Silver (Ag)	ug/L	<0.10	0.10	4583977	<0.10	0.10	4583977	<0.10	0.10	4583977
Dissolved Sodium (Na)	ug/L	8000	100	4583977	12000	100	4583977	15000	100	4583977
Dissolved Strontium (Sr)	ug/L	32	2.0	4583977	220	2.0	4583977	50	2.0	4583977
Dissolved Thallium (Tl)	ug/L	<0.10	0.10	4583977	<0.10	0.10	4583977	<0.10	0.10	4583977
Dissolved Tin (Sn)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977
Dissolved Titanium (Ti)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977
Dissolved Uranium (U)	ug/L	<0.10	0.10	4583977	1.1	0.10	4583977	<0.10	0.10	4583977
Dissolved Vanadium (V)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	4583977	<5.0	5.0	4583977	<5.0	5.0	4583977

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE685		CSE686		CSE687		
Sampling Date		2016/07/14		2016/07/14		2016/07/14		
COC Number		569007-01-01		569007-01-01		569007-01-01		
	UNITS	MW-21C	RDL	QC Batch	MW-22A	RDL	QC Batch	MW-22B

Calculated Parameters

Anion Sum	me/L	0.710	N/A	4580583	4.53	N/A	4580583	17.9	N/A	4580583
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	27	1.0	4580579	170	1.0	4580579	690	1.0	4580579
Calculated TDS	mg/L	48	1.0	4580589	240	1.0	4580589	930	1.0	4580589
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	<1.0	1.0	4580579	1.4	1.0	4580579	1.3	1.0	4580579
Cation Sum	me/L	0.660	N/A	4580583	4.46	N/A	4580583	17.6	N/A	4580583
Hardness (CaCO ₃)	mg/L	23	1.0	4580581	190	1.0	4580581	690	1.0	4580581
Ion Balance (% Difference)	%	3.65	N/A	4580582	0.780	N/A	4580582	0.760	N/A	4580582
Langelier Index (@ 20C)	N/A	-2.05	N/A	4580587	0.554	N/A	4580587	0.965	N/A	4580587
Langelier Index (@ 4C)	N/A	-2.30	N/A	4580588	0.304	N/A	4580588	0.719	N/A	4580588
Nitrate (N)	mg/L	0.34	0.050	4580735	<0.050	0.050	4580735	0.12	0.050	4580735
Saturation pH (@ 20C)	N/A	9.06	N/A	4580587	7.39	N/A	4580587	6.34	N/A	4580587
Saturation pH (@ 4C)	N/A	9.31	N/A	4580588	7.64	N/A	4580588	6.58	N/A	4580588

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	27	5.0	4586401	170	25	4586401	690	100	4586401
Dissolved Chloride (Cl)	mg/L	4.3	1.0	4586409	40	1.0	4586409	150	1.0	4586409
Colour	TCU	<5.0	5.0	4586414	<5.0	5.0	4586414	13	5.0	4586414
Nitrate + Nitrite (N)	mg/L	0.34	0.050	4586417	<0.050	0.050	4586417	0.12	0.050	4586417
Nitrite (N)	mg/L	<0.010	0.010	4586419	<0.010	0.010	4586419	<0.010	0.010	4586419
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	4587899	<0.050	0.050	4587899	1.2	0.050	4587899
Total Organic Carbon (C)	mg/L	<0.50	0.50	4585973	1.6	0.50	4585973	1.3	0.50	4585973
Orthophosphate (P)	mg/L	0.37	0.010	4586415	0.013	0.010	4586415	0.019	0.010	4586415
pH	pH	7.01	N/A	4583898	7.94	N/A	4583898	7.30	N/A	4583898
Reactive Silica (SiO ₂)	mg/L	12	0.50	4586412	10	0.50	4586412	19	0.50	4586412
Dissolved Sulphate (SO ₄)	mg/L	<2.0	2.0	4586410	<2.0	2.0	4586410	<2.0	2.0	4586410
Turbidity	NTU	54	0.10	4584019	0.87	0.10	4584024	120	1.0	4584019
Conductivity	uS/cm	67	1.0	4583900	440	1.0	4583900	1600	1.0	4583900

Metals

Dissolved Aluminum (Al)	ug/L	<5.0	5.0	4583977	<5.0	5.0	4583977	<5.0	5.0	4583977
Dissolved Antimony (Sb)	ug/L	<1.0	1.0	4583977	<1.0	1.0	4583977	<1.0	1.0	4583977
Dissolved Arsenic (As)	ug/L	<1.0	1.0	4583977	1.4	1.0	4583977	4.1	1.0	4583977
Dissolved Barium (Ba)	ug/L	1.8	1.0	4583977	8.6	1.0	4583977	700	1.0	4583977
Dissolved Beryllium (Be)	ug/L	<1.0	1.0	4583977	<1.0	1.0	4583977	<1.0	1.0	4583977
Dissolved Bismuth (Bi)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE685			CSE686			CSE687		
Sampling Date		2016/07/14			2016/07/14		<td>2016/07/14</td> <th></th>	2016/07/14		
COC Number		569007-01-01			569007-01-01		<td>569007-01-01</td> <th></th>	569007-01-01		
	UNITS	MW-21C	RDL	QC Batch	MW-22A	RDL	QC Batch	MW-22B	RDL	QC Batch
Dissolved Boron (B)	ug/L	<50	50	4583977	<50	50	4583977	460	50	4583977
Dissolved Cadmium (Cd)	ug/L	<0.010	0.010	4583977	<0.010	0.010	4583977	0.052	0.010	4583977
Dissolved Calcium (Ca)	ug/L	6600	100	4583977	61000	100	4583977	230000	100	4583977
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	4583977	<1.0	1.0	4583977	<1.0	1.0	4583977
Dissolved Cobalt (Co)	ug/L	<0.40	0.40	4583977	<0.40	0.40	4583977	9.5	0.40	4583977
Dissolved Copper (Cu)	ug/L	4.3	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977
Dissolved Iron (Fe)	ug/L	<50	50	4583977	200	50	4583977	2700	50	4583977
Dissolved Lead (Pb)	ug/L	<0.50	0.50	4583977	<0.50	0.50	4583977	<0.50	0.50	4583977
Dissolved Magnesium (Mg)	ug/L	1700	100	4583977	9200	100	4583977	27000	100	4583977
Dissolved Manganese (Mn)	ug/L	4.2	2.0	4583977	57	2.0	4583977	3400	2.0	4583977
Dissolved Molybdenum (Mo)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977
Dissolved Nickel (Ni)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	25	2.0	4583977
Dissolved Phosphorus (P)	ug/L	400	100	4583977	<100	100	4583977	<100	100	4583977
Dissolved Potassium (K)	ug/L	1300	100	4583977	6300	100	4583977	8100	100	4583977
Dissolved Selenium (Se)	ug/L	<1.0	1.0	4583977	<1.0	1.0	4583977	<1.0	1.0	4583977
Dissolved Silver (Ag)	ug/L	<0.10	0.10	4583977	<0.10	0.10	4583977	<0.10	0.10	4583977
Dissolved Sodium (Na)	ug/L	3600	100	4583977	12000	100	4583977	78000	100	4583977
Dissolved Strontium (Sr)	ug/L	66	2.0	4583977	850	2.0	4583977	2000	2.0	4583977
Dissolved Thallium (Tl)	ug/L	<0.10	0.10	4583977	<0.10	0.10	4583977	<0.10	0.10	4583977
Dissolved Tin (Sn)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977
Dissolved Titanium (Ti)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977
Dissolved Uranium (U)	ug/L	<0.10	0.10	4583977	33	0.10	4583977	12	0.10	4583977
Dissolved Vanadium (V)	ug/L	<2.0	2.0	4583977	<2.0	2.0	4583977	<2.0	2.0	4583977
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	4583977	<5.0	5.0	4583977	8.0	5.0	4583977

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE688	CSE688			CSE689	CSE689	
Sampling Date		2016/07/14	2016/07/14			2016/07/13	2016/07/13	
COC Number		569007-01-01	569007-01-01			569007-01-01	569007-01-01	
	UNITS	MW-22C Lab-Dup	RDL	QC Batch	MW-23A	MW-23A Lab-Dup	RDL	QC Batch
Calculated Parameters								
Anion Sum	me/L	7.69	N/A	N/A	4580583	3.44	N/A	N/A
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	350	N/A	1.0	4580579	81	N/A	1.0
Calculated TDS	mg/L	450	N/A	1.0	4580589	190	N/A	1.0
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	<1.0	N/A	1.0	4580579	<1.0	N/A	1.0
Cation Sum	me/L	8.89	N/A	N/A	4580583	3.15	N/A	N/A
Hardness (CaCO ₃)	mg/L	190	N/A	1.0	4580732	93	N/A	1.0
Ion Balance (% Difference)	%	7.24	N/A	N/A	4580582	4.40	N/A	N/A
Langelier Index (@ 20C)	N/A	-0.139	N/A	N/A	4580587	-0.824	N/A	N/A
Langelier Index (@ 4C)	N/A	-0.388	N/A	N/A	4580588	-1.07	N/A	N/A
Nitrate (N)	mg/L	<0.050	N/A	0.050	4580735	<0.050	N/A	0.050
Saturation pH (@ 20C)	N/A	7.13	N/A	N/A	4580587	7.99	N/A	N/A
Saturation pH (@ 4C)	N/A	7.38	N/A	N/A	4580588	8.24	N/A	N/A
Inorganics								
Total Alkalinity (Total as CaCO ₃)	mg/L	350	N/A	75	4586401	81	80	5.0
Dissolved Chloride (Cl)	mg/L	25	N/A	1.0	4586409	56	54	1.0
Colour	TCU	26	N/A	5.0	4586414	<5.0	<5.0	5.0
Nitrate + Nitrite (N)	mg/L	<0.050	N/A	0.050	4586417	<0.050	<0.050	0.050
Nitrite (N)	mg/L	<0.010	N/A	0.010	4586419	<0.010	<0.010	0.010
Nitrogen (Ammonia Nitrogen)	mg/L	14	17	0.75	4587899	<0.050	N/A	0.050
Total Organic Carbon (C)	mg/L	9.5 (1)	N/A	5.0	4585973	<25 (2)	N/A	25
Orthophosphate (P)	mg/L	0.016	N/A	0.010	4586415	0.043	0.042	0.010
pH	pH	7.00	N/A	N/A	4583904	7.16	7.12	N/A
Reactive Silica (SiO ₂)	mg/L	15	N/A	0.50	4586412	11	11	0.50
Dissolved Sulphate (SO ₄)	mg/L	<2.0	N/A	2.0	4586410	11	11	2.0
Turbidity	NTU	450	N/A	1.0	4585707	>1000	N/A	1.0
Conductivity	uS/cm	730	N/A	1.0	4583907	340	340	1.0
Metals								
Dissolved Aluminum (Al)	ug/L	<5.0	N/A	5.0	4583977	6.2	N/A	5.0
Dissolved Antimony (Sb)	ug/L	<1.0	N/A	1.0	4583977	<1.0	N/A	1.0
Dissolved Arsenic (As)	ug/L	62	N/A	1.0	4583977	<1.0	N/A	1.0
Dissolved Barium (Ba)	ug/L	710	N/A	1.0	4583977	94	N/A	1.0
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
Lab-Dup = Laboratory Initiated Duplicate								
N/A = Not Applicable								
(1) Elevated reporting limit due to sample matrix.								
(2) Reporting limit was increased due to turbidity.								

Maxxam Job #: B6E7391

Report Date: 2016/07/25

Stantec Consulting Ltd

Client Project #: 121414186

Site Location: MEADOWVIEW

Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE688	CSE688			CSE689	CSE689	
Sampling Date		2016/07/14	2016/07/14			2016/07/13	2016/07/13	
COC Number		569007-01-01	569007-01-01			569007-01-01	569007-01-01	
	UNITS	MW-22C Lab-Dup		RDL	QC Batch	MW-23A Lab-Dup		RDL
								QC Batch
Dissolved Beryllium (Be)	ug/L	<1.0	N/A	1.0	4583977	<1.0	N/A	1.0
Dissolved Bismuth (Bi)	ug/L	<2.0	N/A	2.0	4583977	<2.0	N/A	2.0
Dissolved Boron (B)	ug/L	370	N/A	50	4583977	<50	N/A	50
Dissolved Cadmium (Cd)	ug/L	<0.010	N/A	0.010	4583977	0.15	N/A	0.010
Dissolved Calcium (Ca)	ug/L	60000	N/A	100	4583977	31000	N/A	100
Dissolved Chromium (Cr)	ug/L	<1.0	N/A	1.0	4583977	<1.0	N/A	1.0
Dissolved Cobalt (Co)	ug/L	15	N/A	0.40	4583977	<0.40	N/A	0.40
Dissolved Copper (Cu)	ug/L	<2.0	N/A	2.0	4583977	<2.0	N/A	2.0
Dissolved Iron (Fe)	ug/L	41000	N/A	50	4583977	<50	N/A	50
Dissolved Lead (Pb)	ug/L	<0.50	N/A	0.50	4583977	<0.50	N/A	0.50
Dissolved Magnesium (Mg)	ug/L	8600	N/A	100	4583977	3900	N/A	100
Dissolved Manganese (Mn)	ug/L	3300	N/A	2.0	4583977	820	N/A	2.0
Dissolved Molybdenum (Mo)	ug/L	<2.0	N/A	2.0	4583977	<2.0	N/A	2.0
Dissolved Nickel (Ni)	ug/L	12	N/A	2.0	4583977	<2.0	N/A	2.0
Dissolved Phosphorus (P)	ug/L	280	N/A	100	4583977	<100	N/A	100
Dissolved Potassium (K)	ug/L	16000	N/A	100	4583977	1400	N/A	100
Dissolved Selenium (Se)	ug/L	<1.0	N/A	1.0	4583977	<1.0	N/A	1.0
Dissolved Silver (Ag)	ug/L	<0.10	N/A	0.10	4583977	<0.10	N/A	0.10
Dissolved Sodium (Na)	ug/L	52000	N/A	100	4583977	29000	N/A	100
Dissolved Strontium (Sr)	ug/L	280	N/A	2.0	4583977	39	N/A	2.0
Dissolved Thallium (Tl)	ug/L	<0.10	N/A	0.10	4583977	<0.10	N/A	0.10
Dissolved Tin (Sn)	ug/L	<2.0	N/A	2.0	4583977	<2.0	N/A	2.0
Dissolved Titanium (Ti)	ug/L	<2.0	N/A	2.0	4583977	<2.0	N/A	2.0
Dissolved Uranium (U)	ug/L	<0.10	N/A	0.10	4583977	0.22	N/A	0.10
Dissolved Vanadium (V)	ug/L	<2.0	N/A	2.0	4583977	<2.0	N/A	2.0
Dissolved Zinc (Zn)	ug/L	<5.0	N/A	5.0	4583977	7.5	N/A	5.0

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE690	CSE690			CSE691		
Sampling Date		2016/07/13	2016/07/13			2016/07/13		
COC Number		569007-01-01	569007-01-01			569007-01-01		
	UNITS	MW-23B	MW-23B Lab-Dup	RDL	QC Batch	MW-23C	RDL	QC Batch
Calculated Parameters								
Anion Sum	me/L	2.92	N/A	N/A	4580583	1.39	N/A	4580583
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	69	N/A	1.0	4580579	61	1.0	4580579
Calculated TDS	mg/L	170	N/A	1.0	4580589	81	1.0	4580589
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	N/A	1.0	4580579	<1.0	1.0	4580579
Cation Sum	me/L	2.67	N/A	N/A	4580583	1.26	N/A	4580583
Hardness (CaCO3)	mg/L	78	N/A	1.0	4580732	32	1.0	4580732
Ion Balance (% Difference)	%	4.47	N/A	N/A	4580582	4.91	N/A	4580582
Langelier Index (@ 20C)	N/A	-1.11	N/A	N/A	4580587	-0.360	N/A	4580587
Langelier Index (@ 4C)	N/A	-1.36	N/A	N/A	4580588	-0.611	N/A	4580588
Nitrate (N)	mg/L	<0.050	N/A	0.050	4580735	0.22	0.050	4580735
Saturation pH (@ 20C)	N/A	8.13	N/A	N/A	4580587	8.51	N/A	4580587
Saturation pH (@ 4C)	N/A	8.38	N/A	N/A	4580588	8.76	N/A	4580588
Inorganics								
Total Alkalinity (Total as CaCO3)	mg/L	69	N/A	5.0	4586401	62	5.0	4586401
Dissolved Chloride (Cl)	mg/L	45	N/A	1.0	4586409	3.3	1.0	4586409
Colour	TCU	<5.0	N/A	5.0	4586414	<5.0	5.0	4586414
Nitrate + Nitrite (N)	mg/L	0.085	N/A	0.050	4586417	0.22	0.050	4586417
Nitrite (N)	mg/L	0.048	N/A	0.010	4586419	<0.010	0.010	4586419
Nitrogen (Ammonia Nitrogen)	mg/L	0.59	N/A	0.050	4587899	<0.050	0.050	4587899
Total Organic Carbon (C)	mg/L	2.5	N/A	0.50	4585973	<0.50	0.50	4585973
Orthophosphate (P)	mg/L	0.013	N/A	0.010	4586415	0.028	0.010	4586415
pH	pH	7.02	N/A	N/A	4583898	8.15	N/A	4583898
Reactive Silica (SiO2)	mg/L	12	N/A	0.50	4586412	9.7	0.50	4586412
Dissolved Sulphate (SO4)	mg/L	13	N/A	2.0	4586410	2.2	2.0	4586410
Turbidity	NTU	190	200	1.0	4584024	38	0.10	4585712
Conductivity	uS/cm	290	N/A	1.0	4583900	130	1.0	4583900
Metals								
Dissolved Aluminum (Al)	ug/L	<5.0	N/A	5.0	4583977	<5.0	5.0	4587845
Dissolved Antimony (Sb)	ug/L	<1.0	N/A	1.0	4583977	<1.0	1.0	4587845
Dissolved Arsenic (As)	ug/L	5.9	N/A	1.0	4583977	6.0	1.0	4587845
Dissolved Barium (Ba)	ug/L	200	N/A	1.0	4583977	43	1.0	4587845
Dissolved Beryllium (Be)	ug/L	<1.0	N/A	1.0	4583977	<1.0	1.0	4587845
Dissolved Bismuth (Bi)	ug/L	<2.0	N/A	2.0	4583977	<2.0	2.0	4587845
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable								

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE690	CSE690			CSE691		
Sampling Date		2016/07/13	2016/07/13			2016/07/13		
COC Number		569007-01-01	569007-01-01			569007-01-01		
	UNITS	MW-23B Lab-Dup	RDL	QC Batch	MW-23C	RDL	QC Batch	
Dissolved Boron (B)	ug/L	<50	N/A	50	4583977	<50	50	4587845
Dissolved Cadmium (Cd)	ug/L	0.055	N/A	0.010	4583977	<0.010	0.010	4587845
Dissolved Calcium (Ca)	ug/L	25000	N/A	100	4583977	11000	100	4587845
Dissolved Chromium (Cr)	ug/L	<1.0	N/A	1.0	4583977	2.2	1.0	4587845
Dissolved Cobalt (Co)	ug/L	2.1	N/A	0.40	4583977	<0.40	0.40	4587845
Dissolved Copper (Cu)	ug/L	<2.0	N/A	2.0	4583977	<2.0	2.0	4587845
Dissolved Iron (Fe)	ug/L	3300	N/A	50	4583977	<50	50	4587845
Dissolved Lead (Pb)	ug/L	4.0	N/A	0.50	4583977	<0.50	0.50	4587845
Dissolved Magnesium (Mg)	ug/L	3600	N/A	100	4583977	1200	100	4587845
Dissolved Manganese (Mn)	ug/L	2700	N/A	2.0	4583977	<2.0	2.0	4587845
Dissolved Molybdenum (Mo)	ug/L	<2.0	N/A	2.0	4583977	<2.0	2.0	4587845
Dissolved Nickel (Ni)	ug/L	2.5	N/A	2.0	4583977	<2.0	2.0	4587845
Dissolved Phosphorus (P)	ug/L	<100	N/A	100	4583977	<100	100	4587845
Dissolved Potassium (K)	ug/L	2500	N/A	100	4583977	2700	100	4587845
Dissolved Selenium (Se)	ug/L	<1.0	N/A	1.0	4583977	<1.0	1.0	4587845
Dissolved Silver (Ag)	ug/L	<0.10	N/A	0.10	4583977	<0.10	0.10	4587845
Dissolved Sodium (Na)	ug/L	20000	N/A	100	4583977	13000	100	4587845
Dissolved Strontium (Sr)	ug/L	50	N/A	2.0	4583977	93	2.0	4587845
Dissolved Thallium (Tl)	ug/L	<0.10	N/A	0.10	4583977	<0.10	0.10	4587845
Dissolved Tin (Sn)	ug/L	<2.0	N/A	2.0	4583977	<2.0	2.0	4587845
Dissolved Titanium (Ti)	ug/L	<2.0	N/A	2.0	4583977	<2.0	2.0	4587845
Dissolved Uranium (U)	ug/L	<0.10	N/A	0.10	4583977	4.0	0.10	4587845
Dissolved Vanadium (V)	ug/L	<2.0	N/A	2.0	4583977	4.1	2.0	4587845
Dissolved Zinc (Zn)	ug/L	<5.0	N/A	5.0	4583977	<5.0	5.0	4587845

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE715		CSE716		CSE717				
Sampling Date		2016/07/13		2016/07/13		2016/07/14				
COC Number		569007-02-01		569007-02-01		569007-02-01				
	UNITS	MW-24A	RDL	QC Batch	MW-24B	RDL	QC Batch	MW-25B	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	4.94	N/A	4580583	20.1	N/A	4580583	10.8	N/A	4580583
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	95	1.0	4580579	840	1.0	4580579	380	1.0	4580579
Calculated TDS	mg/L	290	1.0	4580589	1100	1.0	4580589	560	1.0	4580589
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	<1.0	1.0	4580579	<1.0	1.0	4580579	<1.0	1.0	4580579
Cation Sum	me/L	4.46	N/A	4580583	22.5	N/A	4580583	10.2	N/A	4580583
Hardness (CaCO ₃)	mg/L	87	1.0	4580732	380	1.0	4580732	440	1.0	4580732
Ion Balance (% Difference)	%	5.11	N/A	4580582	5.52	N/A	4580582	2.72	N/A	4580582
Langelier Index (@ 20C)	N/A	-1.47	N/A	4580587	0.387	N/A	4580587	0.694	N/A	4580587
Langelier Index (@ 4C)	N/A	-1.72	N/A	4580588	0.141	N/A	4580588	0.446	N/A	4580588
Nitrate (N)	mg/L	3.6	0.050	4580735	<0.050	0.050	4580735	<0.050	0.050	4580735
Saturation pH (@ 20C)	N/A	8.05	N/A	4580587	6.63	N/A	4580587	6.73	N/A	4580587
Saturation pH (@ 4C)	N/A	8.30	N/A	4580588	6.88	N/A	4580588	6.98	N/A	4580588

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	96	5.0	4586401	840	100	4586401	380	25	4586401
Dissolved Chloride (Cl)	mg/L	95	1.0	4586409	120	1.0	4586409	110	1.0	4586409
Colour	TCU	<5.0	5.0	4586414	45	5.0	4586414	<5.0	5.0	4586414
Nitrate + Nitrite (N)	mg/L	3.7	0.050	4586417	<0.050	0.050	4586417	<0.050	0.050	4586417
Nitrite (N)	mg/L	0.068	0.010	4586419	<0.010	0.010	4586419	<0.010	0.010	4586419
Nitrogen (Ammonia Nitrogen)	mg/L	5.9	0.25	4587899	95	2.5	4587899	<0.050	0.050	4587899
Total Organic Carbon (C)	mg/L	2.2	0.50	4585973	28 (1)	5.0	4586193	9.4 (1)	5.0	4586193
Orthophosphate (P)	mg/L	0.016	0.010	4586415	0.020	0.010	4586415	0.021	0.010	4586415
pH	pH	6.58	N/A	4583898	7.02	N/A	4583904	7.43	N/A	4583898
Reactive Silica (SiO ₂)	mg/L	16	0.50	4586412	17	0.50	4586412	15	0.50	4586412
Dissolved Sulphate (SO ₄)	mg/L	3.9	2.0	4586410	<2.0	2.0	4586410	<2.0	2.0	4586410
Turbidity	NTU	4.8	0.10	4585707	520	1.0	4585707	1.5	0.10	4585707
Conductivity	uS/cm	520	1.0	4583900	1900	1.0	4583907	970	1.0	4583900

Metals

Dissolved Aluminum (Al)	ug/L	6.4	5.0	4587845	<5.0	5.0	4587845	<5.0	5.0	4587845
Dissolved Antimony (Sb)	ug/L	<1.0	1.0	4587845	<1.0	1.0	4587845	<1.0	1.0	4587845
Dissolved Arsenic (As)	ug/L	<1.0	1.0	4587845	53	1.0	4587845	3.6	1.0	4587845
Dissolved Barium (Ba)	ug/L	400	1.0	4587845	1700	1.0	4587845	27	1.0	4587845
Dissolved Beryllium (Be)	ug/L	<1.0	1.0	4587845	<1.0	1.0	4587845	<1.0	1.0	4587845
Dissolved Bismuth (Bi)	ug/L	<2.0	2.0	4587845	<2.0	2.0	4587845	<2.0	2.0	4587845

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Elevated reporting limit due to sample matrix.

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE715			CSE716			CSE717		
Sampling Date		2016/07/13			2016/07/13		<td>2016/07/14</td> <th></th>	2016/07/14		
COC Number		569007-02-01			569007-02-01		<td>569007-02-01</td> <th></th>	569007-02-01		
	UNITS	MW-24A	RDL	QC Batch	MW-24B	RDL	QC Batch	MW-25B	RDL	QC Batch
Dissolved Boron (B)	ug/L	140	50	4587845	970	50	4587845	160	50	4587845
Dissolved Cadmium (Cd)	ug/L	0.22	0.010	4587845	<0.010	0.010	4587845	0.021	0.010	4587845
Dissolved Calcium (Ca)	ug/L	24000	100	4587845	100000	100	4587845	150000	100	4587845
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	4587845	<1.0	1.0	4587845	<1.0	1.0	4587845
Dissolved Cobalt (Co)	ug/L	<0.40	0.40	4587845	18	0.40	4587845	0.84	0.40	4587845
Dissolved Copper (Cu)	ug/L	<2.0	2.0	4587845	<2.0	2.0	4587845	<2.0	2.0	4587845
Dissolved Iron (Fe)	ug/L	65	50	4587845	40000	50	4587845	<50	50	4587845
Dissolved Lead (Pb)	ug/L	<0.50	0.50	4587845	<0.50	0.50	4587845	<0.50	0.50	4587845
Dissolved Magnesium (Mg)	ug/L	6500	100	4587845	32000	100	4587845	18000	100	4587845
Dissolved Manganese (Mn)	ug/L	410	2.0	4587845	3000	2.0	4587845	300	2.0	4587845
Dissolved Molybdenum (Mo)	ug/L	<2.0	2.0	4587845	<2.0	2.0	4587845	<2.0	2.0	4587845
Dissolved Nickel (Ni)	ug/L	2.5	2.0	4587845	18	2.0	4587845	11	2.0	4587845
Dissolved Phosphorus (P)	ug/L	<100	100	4587845	580	100	4587845	<100	100	4587845
Dissolved Potassium (K)	ug/L	15000	100	4587845	74000	100	4587845	6600	100	4587845
Dissolved Selenium (Se)	ug/L	<1.0	1.0	4587845	<1.0	1.0	4587845	<1.0	1.0	4587845
Dissolved Silver (Ag)	ug/L	<0.10	0.10	4587845	<0.10	0.10	4587845	<0.10	0.10	4587845
Dissolved Sodium (Na)	ug/L	44000	100	4587845	110000	100	4587845	29000	100	4587845
Dissolved Strontium (Sr)	ug/L	150	2.0	4587845	780	2.0	4587845	1600	2.0	4587845
Dissolved Thallium (Tl)	ug/L	<0.10	0.10	4587845	<0.10	0.10	4587845	<0.10	0.10	4587845
Dissolved Tin (Sn)	ug/L	<2.0	2.0	4587845	<2.0	2.0	4587845	<2.0	2.0	4587845
Dissolved Titanium (Ti)	ug/L	<2.0	2.0	4587845	<2.0	2.0	4587845	<2.0	2.0	4587845
Dissolved Uranium (U)	ug/L	<0.10	0.10	4587845	<0.10	0.10	4587845	17	0.10	4587845
Dissolved Vanadium (V)	ug/L	<2.0	2.0	4587845	2.0	2.0	4587845	<2.0	2.0	4587845
Dissolved Zinc (Zn)	ug/L	6.1	5.0	4587845	<5.0	5.0	4587845	<5.0	5.0	4587845

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B6E7391

Report Date: 2016/07/25

Stantec Consulting Ltd

Client Project #: 121414186

Site Location: MEADOWVIEW

Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE720			CSE721	CSE721	
Sampling Date		2016/07/13			2016/07/13	2016/07/13	
COC Number		569007-02-01			569007-02-01	569007-02-01	
	UNITS	MW-29B	RDL	QC Batch	MW-29C	MW-29C Lab-Dup	RDL
Calculated Parameters							
Anion Sum	me/L	2.16	N/A	4580734	1.57	N/A	N/A
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	91	1.0	4580730	47	N/A	1.0
Calculated TDS	mg/L	120	1.0	4580738	90	N/A	1.0
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.0	1.0	4580730	<1.0	N/A	1.0
Cation Sum	me/L	2.12	N/A	4580734	1.38	N/A	N/A
Hardness (CaCO3)	mg/L	86	1.0	4580732	23	N/A	1.0
Ion Balance (% Difference)	%	0.930	N/A	4580733	6.44	N/A	N/A
Langelier Index (@ 20C)	N/A	0.143	N/A	4580736	-0.582	N/A	N/A
Langelier Index (@ 4C)	N/A	-0.108	N/A	4580737	-0.833	N/A	N/A
Nitrate (N)	mg/L	0.066	0.050	4580735	0.30	N/A	0.050
Saturation pH (@ 20C)	N/A	7.93	N/A	4580736	8.78	N/A	N/A
Saturation pH (@ 4C)	N/A	8.19	N/A	4580737	9.03	N/A	N/A
Inorganics							
Total Alkalinity (Total as CaCO3)	mg/L	92	10	4586424	48	N/A	5.0
Dissolved Chloride (Cl)	mg/L	8.0	1.0	4586426	17	N/A	1.0
Colour	TCU	<5.0	5.0	4586439	<5.0	N/A	5.0
Nitrate + Nitrite (N)	mg/L	0.066	0.050	4586447	0.30	N/A	0.050
Nitrite (N)	mg/L	<0.010	0.010	4586455	<0.010	N/A	0.010
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	4587899	<0.050	N/A	0.050
Total Organic Carbon (C)	mg/L	<5.0 (1)	5.0	4586193	<25 (1)	N/A	25
Orthophosphate (P)	mg/L	0.028	0.010	4586445	0.012	N/A	0.010
pH	pH	8.08	N/A	4583898	8.20	N/A	N/A
Reactive Silica (SiO2)	mg/L	9.0	0.50	4586433	6.9	N/A	0.50
Dissolved Sulphate (SO4)	mg/L	4.1	2.0	4586428	5.1	N/A	2.0
Turbidity	NTU	410	1.0	4585707	830	N/A	1.0
Conductivity	uS/cm	210	1.0	4583900	150	N/A	1.0
Metals							
Dissolved Aluminum (Al)	ug/L	<5.0	5.0	4587845	6.2	6.3	5.0
Dissolved Antimony (Sb)	ug/L	<1.0	1.0	4587845	<1.0	<1.0	1.0
Dissolved Arsenic (As)	ug/L	1.7	1.0	4587845	4.9	4.7	1.0
Dissolved Barium (Ba)	ug/L	12	1.0	4587845	2.9	2.9	1.0
Dissolved Beryllium (Be)	ug/L	<1.0	1.0	4587845	<1.0	<1.0	1.0
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
Lab-Dup = Laboratory Initiated Duplicate							
N/A = Not Applicable							
(1) Reporting limit was increased due to turbidity.							

Maxxam Job #: B6E7391

Report Date: 2016/07/25

Stantec Consulting Ltd

Client Project #: 121414186

Site Location: MEADOWVIEW

Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE720			CSE721	CSE721		
Sampling Date		2016/07/13			2016/07/13	2016/07/13		
COC Number		569007-02-01			569007-02-01	569007-02-01		
	UNITS	MW-29B	RDL	QC Batch	MW-29C	MW-29C Lab-Dup	RDL	QC Batch
Dissolved Bismuth (Bi)	ug/L	<2.0	2.0	4587845	<2.0	<2.0	2.0	4587845
Dissolved Boron (B)	ug/L	<50	50	4587845	<50	<50	50	4587845
Dissolved Cadmium (Cd)	ug/L	0.016	0.010	4587845	<0.010	<0.010	0.010	4587845
Dissolved Calcium (Ca)	ug/L	29000	100	4587845	7700	7700	100	4587845
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	4587845	<1.0	<1.0	1.0	4587845
Dissolved Cobalt (Co)	ug/L	<0.40	0.40	4587845	<0.40	<0.40	0.40	4587845
Dissolved Copper (Cu)	ug/L	<2.0	2.0	4587845	<2.0	<2.0	2.0	4587845
Dissolved Iron (Fe)	ug/L	<50	50	4587845	<50	<50	50	4587845
Dissolved Lead (Pb)	ug/L	<0.50	0.50	4587845	<0.50	<0.50	0.50	4587845
Dissolved Magnesium (Mg)	ug/L	3400	100	4587845	990	1000	100	4587845
Dissolved Manganese (Mn)	ug/L	<2.0	2.0	4587845	<2.0	<2.0	2.0	4587845
Dissolved Molybdenum (Mo)	ug/L	<2.0	2.0	4587845	<2.0	<2.0	2.0	4587845
Dissolved Nickel (Ni)	ug/L	<2.0	2.0	4587845	<2.0	<2.0	2.0	4587845
Dissolved Phosphorus (P)	ug/L	<100	100	4587845	<100	<100	100	4587845
Dissolved Potassium (K)	ug/L	3300	100	4587845	2900	3000	100	4587845
Dissolved Selenium (Se)	ug/L	<1.0	1.0	4587845	<1.0	<1.0	1.0	4587845
Dissolved Silver (Ag)	ug/L	<0.10	0.10	4587845	<0.10	<0.10	0.10	4587845
Dissolved Sodium (Na)	ug/L	7600	100	4587845	19000	20000	100	4587845
Dissolved Strontium (Sr)	ug/L	310	2.0	4587845	94	97	2.0	4587845
Dissolved Thallium (Tl)	ug/L	<0.10	0.10	4587845	<0.10	<0.10	0.10	4587845
Dissolved Tin (Sn)	ug/L	<2.0	2.0	4587845	<2.0	<2.0	2.0	4587845
Dissolved Titanium (Ti)	ug/L	<2.0	2.0	4587845	<2.0	<2.0	2.0	4587845
Dissolved Uranium (U)	ug/L	2.0	0.10	4587845	0.98	0.98	0.10	4587845
Dissolved Vanadium (V)	ug/L	<2.0	2.0	4587845	5.4	5.6	2.0	4587845
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	4587845	<5.0	<5.0	5.0	4587845

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE722		CSE723			CSE724	
Sampling Date		2016/07/13		2016/07/14			2016/07/14	
COC Number		569007-02-01		569007-02-01			569007-02-01	
	UNITS	MW-31A	RDL	MW-4A	RDL	QC Batch	TH-1	RDL

Calculated Parameters

Anion Sum	me/L	0.430	N/A	14.1	N/A	4580734	10.2	N/A	4580734
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	12	1.0	650	1.0	4580730	470	1.0	4580730
Calculated TDS	mg/L	28	1.0	780	1.0	4580738	580	1.0	4580738
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	<1.0	1.0	4580730	<1.0	1.0	4580730
Cation Sum	me/L	0.370	N/A	15.6	N/A	4580734	11.6	N/A	4580734
Hardness (CaCO3)	mg/L	13	1.0	350	1.0	4580732	280	1.0	4580732
Ion Balance (% Difference)	%	7.50	N/A	5.36	N/A	4580733	6.10	N/A	4580733
Langelier Index (@ 20C)	N/A	-2.86	N/A	0.508	N/A	4580736	0.451	N/A	4580736
Langelier Index (@ 4C)	N/A	-3.11	N/A	0.262	N/A	4580737	0.203	N/A	4580737
Nitrate (N)	mg/L	<0.050	0.050	<0.050	0.050	4580735	<0.050	0.050	4580735
Saturation pH (@ 20C)	N/A	9.63	N/A	6.70	N/A	4580736	6.86	N/A	4580736
Saturation pH (@ 4C)	N/A	9.88	N/A	6.95	N/A	4580737	7.11	N/A	4580737

Inorganics

Total Alkalinity (Total as CaCO3)	mg/L	12	5.0	650	100	4586424	470	100	4586424
Dissolved Chloride (Cl)	mg/L	4.3	1.0	38	1.0	4586426	27	1.0	4586426
Colour	TCU	<5.0	5.0	11	5.0	4586439	7.6	5.0	4586439
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	<0.050	0.050	4586447	<0.050	0.050	4586447
Nitrite (N)	mg/L	<0.010	0.010	<0.010	0.010	4586455	<0.010	0.010	4586455
Nitrogen (Ammonia Nitrogen)	mg/L	0.10	0.050	74	2.5	4587899	40	2.5	4587902
Total Organic Carbon (C)	mg/L	<5.0 (1)	5.0	19 (1)	5.0	4586193	7.4 (1)	1.0	4586193
Orthophosphate (P)	mg/L	0.011	0.010	0.034	0.010	4586445	0.027	0.010	4586445
pH	pH	6.77	N/A	7.21	N/A	4583898	7.31	N/A	4583911
Reactive Silica (SiO2)	mg/L	6.3	0.50	35	2.5	4586433	31	2.5	4586433
Dissolved Sulphate (SO4)	mg/L	3.5	2.0	<2.0	2.0	4586428	<2.0	2.0	4586428
Turbidity	NTU	65	0.10	>1000	1.0	4585707	160	1.0	4584019
Conductivity	uS/cm	42	1.0	1400	1.0	4583900	1000	1.0	4583912

Metals

Dissolved Aluminum (Al)	ug/L	5.1	5.0	<5.0	5.0	4587845	<5.0	5.0	4587845
Dissolved Antimony (Sb)	ug/L	<1.0	1.0	<1.0	1.0	4587845	<1.0	1.0	4587845
Dissolved Arsenic (As)	ug/L	<1.0	1.0	64	1.0	4587845	26	1.0	4587845
Dissolved Barium (Ba)	ug/L	5.5	1.0	3300	10	4587845	1000	1.0	4587845
Dissolved Beryllium (Be)	ug/L	<1.0	1.0	<1.0	1.0	4587845	<1.0	1.0	4587845
Dissolved Bismuth (Bi)	ug/L	<2.0	2.0	<2.0	2.0	4587845	<2.0	2.0	4587845

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Reporting limit was increased due to turbidity.

Maxxam Job #: B6E7391

Report Date: 2016/07/25

Stantec Consulting Ltd

Client Project #: 121414186

Site Location: MEADOWVIEW

Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE722		CSE723		CSE724		
Sampling Date		2016/07/13		2016/07/14		2016/07/14		
COC Number		569007-02-01		569007-02-01		569007-02-01		
	UNITS	MW-31A	RDL	MW-4A	RDL	QC Batch	TH-1	RDL QC Batch
Dissolved Boron (B)	ug/L	<50	50	390	50	4587845	220	50 4587845
Dissolved Cadmium (Cd)	ug/L	0.011	0.010	<0.010	0.010	4587845	<0.010	0.010 4587845
Dissolved Calcium (Ca)	ug/L	3900	100	100000	100	4587845	88000	100 4587845
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	<1.0	1.0	4587845	<1.0	1.0 4587845
Dissolved Cobalt (Co)	ug/L	<0.40	0.40	12	0.40	4587845	6.3	0.40 4587845
Dissolved Copper (Cu)	ug/L	<2.0	2.0	<2.0	2.0	4587845	<2.0	2.0 4587845
Dissolved Iron (Fe)	ug/L	<50	50	19000	50	4587845	12000	50 4587845
Dissolved Lead (Pb)	ug/L	<0.50	0.50	<0.50	0.50	4587845	<0.50	0.50 4587845
Dissolved Magnesium (Mg)	ug/L	700	100	23000	100	4587845	16000	100 4587845
Dissolved Manganese (Mn)	ug/L	22	2.0	550	2.0	4587845	1100	2.0 4587845
Dissolved Molybdenum (Mo)	ug/L	<2.0	2.0	<2.0	2.0	4587845	<2.0	2.0 4587845
Dissolved Nickel (Ni)	ug/L	<2.0	2.0	18	2.0	4587845	6.5	2.0 4587845
Dissolved Phosphorus (P)	ug/L	<100	100	120	100	4587845	100	100 4587845
Dissolved Potassium (K)	ug/L	<100	100	50000	100	4587845	33000	100 4587845
Dissolved Selenium (Se)	ug/L	<1.0	1.0	<1.0	1.0	4587845	<1.0	1.0 4587845
Dissolved Silver (Ag)	ug/L	<0.10	0.10	<0.10	0.10	4587845	<0.10	0.10 4587845
Dissolved Sodium (Na)	ug/L	2700	100	33000	100	4587845	41000	100 4587845
Dissolved Strontium (Sr)	ug/L	18	2.0	770	2.0	4587845	400	2.0 4587845
Dissolved Thallium (Tl)	ug/L	<0.10	0.10	<0.10	0.10	4587845	<0.10	0.10 4587845
Dissolved Tin (Sn)	ug/L	<2.0	2.0	<2.0	2.0	4587845	<2.0	2.0 4587845
Dissolved Titanium (Ti)	ug/L	<2.0	2.0	<2.0	2.0	4587845	<2.0	2.0 4587845
Dissolved Uranium (U)	ug/L	<0.10	0.10	<0.10	0.10	4587845	<0.10	0.10 4587845
Dissolved Vanadium (V)	ug/L	<2.0	2.0	<2.0	2.0	4587845	<2.0	2.0 4587845
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	7.2	5.0	4587845	<5.0	5.0 4587845

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B6E7391

Report Date: 2016/07/25

Stantec Consulting Ltd

Client Project #: 121414186

Site Location: MEADOWVIEW

Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE786		CSE787		
Sampling Date		2016/07/14		2016/07/14		
COC Number		569007-03-01		569007-03-01		
	UNITS	TH-2	QC Batch	MW-40D (dup)	RDL	QC Batch
Calculated Parameters						
Anion Sum	me/L	1.25	4580734	1.41	N/A	4580734
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	56	4580730	37	1.0	4580730
Calculated TDS	mg/L	74	4580738	94	1.0	4580738
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	4580730	<1.0	1.0	4580730
Cation Sum	me/L	1.15	4580734	1.32	N/A	4580734
Hardness (CaCO3)	mg/L	31	4580732	37	1.0	4580732
Ion Balance (% Difference)	%	4.17	4580733	3.30	N/A	4580733
Langelier Index (@ 20C)	N/A	-0.948	4580736	-1.49	N/A	4580736
Langelier Index (@ 4C)	N/A	-1.20	4580737	-1.74	N/A	4580737
Nitrate (N)	mg/L	0.098	4580735	<0.050	0.050	4580735
Saturation pH (@ 20C)	N/A	8.59	4580736	8.66	N/A	4580736
Saturation pH (@ 4C)	N/A	8.85	4580737	8.91	N/A	4580737
Inorganics						
Total Alkalinity (Total as CaCO3)	mg/L	56	4586424	37	5.0	4586424
Dissolved Chloride (Cl)	mg/L	4.2	4586426	20	1.0	4586426
Colour	TCU	<5.0	4586439	8.8	5.0	4586439
Nitrate + Nitrite (N)	mg/L	0.098	4586447	<0.050	0.050	4586447
Nitrite (N)	mg/L	<0.010	4586455	<0.010	0.010	4586455
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	4587902	<0.050	0.050	4587902
Total Organic Carbon (C)	mg/L	<0.50	4586193	0.80	0.50	4586193
Orthophosphate (P)	mg/L	0.013	4586445	0.013	0.010	4586445
pH	pH	7.65	4583898	7.17	N/A	4583898
Reactive Silica (SiO2)	mg/L	11	4586433	13	0.50	4586433
Dissolved Sulphate (SO4)	mg/L	<2.0	4586428	5.3	2.0	4586428
Turbidity	NTU	17	4584019	78	0.10	4585707
Conductivity	uS/cm	110	4583900	140	1.0	4583900
Metals						
Dissolved Aluminum (Al)	ug/L	<5.0	4587845	<5.0	5.0	4587845
Dissolved Antimony (Sb)	ug/L	<1.0	4587845	<1.0	1.0	4587845
Dissolved Arsenic (As)	ug/L	<1.0	4587845	7.7	1.0	4587845
Dissolved Barium (Ba)	ug/L	3.4	4587845	120	1.0	4587845
Dissolved Beryllium (Be)	ug/L	<1.0	4587845	<1.0	1.0	4587845
Dissolved Bismuth (Bi)	ug/L	<2.0	4587845	<2.0	2.0	4587845
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						
N/A = Not Applicable						

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

Maxxam ID		CSE786		CSE787		
Sampling Date		2016/07/14		2016/07/14		
COC Number		569007-03-01		569007-03-01		
	UNITS	TH-2	QC Batch	MW-40D (dup)	RDL	QC Batch
Dissolved Boron (B)	ug/L	<50	4587845	<50	50	4587845
Dissolved Cadmium (Cd)	ug/L	<0.010	4587845	<0.010	0.010	4587845
Dissolved Calcium (Ca)	ug/L	9700	4587845	13000	100	4587845
Dissolved Chromium (Cr)	ug/L	<1.0	4587845	<1.0	1.0	4587845
Dissolved Cobalt (Co)	ug/L	<0.40	4587845	2.3	0.40	4587845
Dissolved Copper (Cu)	ug/L	<2.0	4587845	<2.0	2.0	4587845
Dissolved Iron (Fe)	ug/L	650	4587845	6100	50	4587845
Dissolved Lead (Pb)	ug/L	<0.50	4587845	<0.50	0.50	4587845
Dissolved Magnesium (Mg)	ug/L	1600	4587845	980	100	4587845
Dissolved Manganese (Mn)	ug/L	59	4587845	4400	2.0	4587845
Dissolved Molybdenum (Mo)	ug/L	<2.0	4587845	<2.0	2.0	4587845
Dissolved Nickel (Ni)	ug/L	<2.0	4587845	<2.0	2.0	4587845
Dissolved Phosphorus (P)	ug/L	<100	4587845	<100	100	4587845
Dissolved Potassium (K)	ug/L	1900	4587845	940	100	4587845
Dissolved Selenium (Se)	ug/L	<1.0	4587845	<1.0	1.0	4587845
Dissolved Silver (Ag)	ug/L	<0.10	4587845	<0.10	0.10	4587845
Dissolved Sodium (Na)	ug/L	11000	4587845	8000	100	4587845
Dissolved Strontium (Sr)	ug/L	130	4587845	31	2.0	4587845
Dissolved Thallium (Tl)	ug/L	<0.10	4587845	<0.10	0.10	4587845
Dissolved Tin (Sn)	ug/L	<2.0	4587845	<2.0	2.0	4587845
Dissolved Titanium (Ti)	ug/L	<2.0	4587845	<2.0	2.0	4587845
Dissolved Uranium (U)	ug/L	<0.10	4587845	<0.10	0.10	4587845
Dissolved Vanadium (V)	ug/L	<2.0	4587845	<2.0	2.0	4587845
Dissolved Zinc (Zn)	ug/L	<5.0	4587845	<5.0	5.0	4587845

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

ATLANTIC VOC IN WATER (WATER)

Maxxam ID		CSE682	CSE686	CSE687	CSE715	CSE716		
Sampling Date		2016/07/14	2016/07/14	2016/07/14	2016/07/13	2016/07/13		
COC Number		569007-01-01	569007-01-01	569007-01-01	569007-02-01	569007-02-01		
	UNITS	MW-12B	MW-22A	MW-22B	MW-24A	MW-24B	RDL	QC Batch
Chlorobenzenes								
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4582295
1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	2.1	1.0	4582295
Chlorobenzene	ug/L	<1.0	<1.0	1.9	<1.0	7.0	1.0	4582295
Volatile Organics								
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4582295
1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
1,1-Dichloroethane	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	4582295
1,1-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4582295
1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
1,2-Dichloropropane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4582295
Benzene	ug/L	<1.0	<1.0	1.2	<1.0	2.7	1.0	4582295
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4582295
Carbon Tetrachloride	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4582295
Chloroethane	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	8.0	4582295
Chloroform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Chloromethane	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	8.0	4582295
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4582295
cis-1,3-Dichloropropene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4582295
Dibromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4582295
Methylene Chloride(Dichloromethane)	ug/L	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	4582295
o-Xylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
p+m-Xylene	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	4582295
Styrene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Tetrachloroethylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4582295
trans-1,3-Dichloropropene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4582295
Trichloroethylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4582295

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

ATLANTIC VOC IN WATER (WATER)

Maxxam ID		CSE682	CSE686	CSE687	CSE715	CSE716		
Sampling Date		2016/07/14	2016/07/14	2016/07/14	2016/07/13	2016/07/13		
COC Number		569007-01-01	569007-01-01	569007-01-01	569007-02-01	569007-02-01		
	UNITS	MW-12B	MW-22A	MW-22B	MW-24A	MW-24B	RDL	QC Batch
Trichlorofluoromethane (FREON 11)	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	8.0	4582295
Vinyl Chloride	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4582295
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	98	98	97	100	96 (1)	N/A	4582295
D4-1,2-Dichloroethane	%	105	106	106	97	106	N/A	4582295
D8-Toluene	%	99	98	98	100	97	N/A	4582295
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) VOC sample contained sediment.								

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

ATLANTIC VOC IN WATER (WATER)

Maxxam ID		CSE717	CSE723	CSE724	CSE787		
Sampling Date		2016/07/14	2016/07/14	2016/07/14	2016/07/14		
COC Number		569007-02-01	569007-02-01	569007-02-01	569007-03-01		
	UNITS	MW-25B	MW-4A	TH-1	MW-40D (dup)	RDL	QC Batch
Chlorobenzenes							
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4582295
1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
1,4-Dichlorobenzene	ug/L	<1.0	2.6	1.9	<1.0	1.0	4582295
Chlorobenzene	ug/L	<1.0	4.8	3.1	<1.0	1.0	4582295
Volatile Organics							
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4582295
1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
1,1-Dichloroethane	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	4582295
1,1-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4582295
1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
1,2-Dichloropropane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4582295
Benzene	ug/L	<1.0	1.6	<1.0	<1.0	1.0	4582295
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4582295
Carbon Tetrachloride	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4582295
Chloroethane	ug/L	<8.0	<8.0	<8.0	<8.0	8.0	4582295
Chloroform	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Chloromethane	ug/L	<8.0	<8.0	<8.0	<8.0	8.0	4582295
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4582295
cis-1,3-Dichloropropene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4582295
Dibromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4582295
Methylene Chloride(Dichloromethane)	ug/L	<3.0	<3.0	<3.0	<3.0	3.0	4582295
o-Xylene	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
p+m-Xylene	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	4582295
Styrene	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Tetrachloroethylene	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4582295
trans-1,3-Dichloropropene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4582295
Trichloroethylene	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4582295

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Maxxam Job #: B6E7391

Report Date: 2016/07/25

Stantec Consulting Ltd

Client Project #: 121414186

Site Location: MEADOWVIEW

Sampler Initials: MP

ATLANTIC VOC IN WATER (WATER)

Maxxam ID		CSE717	CSE723	CSE724	CSE787		
Sampling Date		2016/07/14	2016/07/14	2016/07/14	2016/07/14		
COC Number		569007-02-01	569007-02-01	569007-02-01	569007-03-01		
	UNITS	MW-25B	MW-4A	TH-1	MW-40D (dup)	RDL	QC Batch
Trichlorofluoromethane (FREON 11)	ug/L	<8.0	<8.0	<8.0	<8.0	8.0	4582295
Vinyl Chloride	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4582295
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	98	96 (1)	97	98 (1)	N/A	4582295
D4-1,2-Dichloroethane	%	109	108	107	108	N/A	4582295
D8-Toluene	%	98	97	98	98	N/A	4582295
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
N/A = Not Applicable							
(1) VOC sample contained sediment.							

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		CSE687	CSE716	CSE716	CSE723	CSE724		
Sampling Date		2016/07/14	2016/07/13	2016/07/13	2016/07/14	2016/07/14		
COC Number		569007-01-01	569007-02-01	569007-02-01	569007-02-01	569007-02-01		
	UNITS	MW-22B	MW-24B	MW-24B Lab-Dup	MW-4A	TH-1	RDL	QC Batch

Semivolatile Organics

Acenaphthene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Acenaphthylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Anthracene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Benzo(a)anthracene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Benzo(a)pyrene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Benzo(b/j)fluoranthene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Benzo(g,h,i)perylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Benzo(k)fluoranthene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
1-Chloronaphthalene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4588530
2-Chloronaphthalene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Chrysene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Dibenz(a,h)anthracene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Fluoranthene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Fluorene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Indeno(1,2,3-cd)pyrene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
1-Methylnaphthalene	ug/L	<0.20	0.25	0.31	<0.20	<0.20	0.20	4588530
2-Methylnaphthalene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Naphthalene	ug/L	<0.20	0.58	0.68	<0.20	<0.20	0.20	4588530
Perylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Phenanthrene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
Pyrene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4588530
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
1,4-Dichlorobenzene	ug/L	<0.50	1.3	1.5	1.8	1.2	0.50	4588530
Hexachlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Pentachlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
1,2,3,5-Tetrachlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
1,2,4,5-Tetrachlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
1,2,3-Trichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
1,2,4-Trichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
1,3,5-Trichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2-Chlorophenol	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	4588530
4-Chloro-3-Methylphenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		CSE687	CSE716	CSE716	CSE723	CSE724		
Sampling Date		2016/07/14	2016/07/13	2016/07/13	2016/07/14	2016/07/14		
COC Number		569007-01-01	569007-02-01	569007-02-01	569007-02-01	569007-02-01		
	UNITS	MW-22B	MW-24B	MW-24B Lab-Dup	MW-4A	TH-1	RDL	QC Batch
m/p-Cresol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
o-Cresol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
1,2,3,4-Tetrachlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2,3-Dichlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2,4-Dichlorophenol	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	4588530
2,5-Dichlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2,6-Dichlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
3,4-Dichlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
3,5-Dichlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2,4-Dimethylphenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2,4-Dinitrophenol	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	4588530
4,6-Dinitro-2-methylphenol	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	4588530
2-Nitrophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
4-Nitrophenol	ug/L	<1.4	<1.4	<1.4	<1.4	<1.4	1.4	4588530
Pentachlorophenol	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4588530
Phenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2,3,4,5-Tetrachlorophenol	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	4588530
2,3,4,6-Tetrachlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2,3,5,6-Tetrachlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2,3,4-Trichlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2,3,5-Trichlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2,3,6-Trichlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2,4,5-Trichlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
2,4,6-Trichlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
3,4,5-Trichlorophenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Benzyl butyl phthalate	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Biphenyl	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Bis(2-chloroethyl)ether	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Bis(2-chloroethoxy)methane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Bis(2-chloroisopropyl)ether	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Bis(2-ethylhexyl)phthalate	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	4588530
4-Bromophenyl phenyl ether	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	4588530
p-Chloroaniline	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4588530
4-Chlorophenyl phenyl ether	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		CSE687	CSE716	CSE716	CSE723	CSE724		
Sampling Date		2016/07/14	2016/07/13	2016/07/13	2016/07/14	2016/07/14		
COC Number		569007-01-01	569007-02-01	569007-02-01	569007-02-01	569007-02-01		
	UNITS	MW-22B	MW-24B	MW-24B Lab-Dup	MW-4A	TH-1	RDL	QC Batch
Di-N-butyl phthalate	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	4588530
Di-N-octyl phthalate	ug/L	<0.80	<0.80	<0.80	<0.80	<0.80	0.80	4588530
2,4-Dinitrotoluene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Diethyl phthalate	ug/L	<1.0	<1.0	<1.0	1.6	<1.0	1.0	4588530
3,3'-Dichlorobenzidine	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Dimethyl phthalate	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4588530
2,6-Dinitrotoluene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Diphenyl Ether	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	4588530
Hexachlorobutadiene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	4588530
Hexachlorocyclopentadiene	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	4588530
Hexachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Isophorone	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Nitrobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Nitrosodiphenylamine/Diphenylamine	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4588530
N-Nitroso-di-n-propylamine	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4588530
Surrogate Recovery (%)								
2,4,6-Tribromophenol	%	82	87	87	82	81	N/A	4588530
2-Fluorobiphenyl	%	72	55	59	70	60	N/A	4588530
2-Fluorophenol	%	36	28	32	27	31	N/A	4588530
D14-Terphenyl	%	89	87	84	84	83	N/A	4588530
D5-Nitrobenzene	%	69	49	58	56	57	N/A	4588530
D5-Phenol	%	25	22	22	23	22	N/A	4588530

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

Maxxam Job #: B6E7391
Report Date: 2016/07/25

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.0°C
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Sample CSE683-01 : RCAP Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample CSE688-01 : Poor RCAP Ion Balance due to sample matrix. Possibly due to fine particulate matter.

Sample CSE715-01 : Poor RCAP Ion Balance due to sample matrix. Excess cations due to presence of turbidity.

Sample CSE716-01 : Poor RCAP Ion Balance due to sample matrix. Possibly due to fine particulate matter.

Sample CSE718-01 : Poor RCAP Ion Balance due to sample matrix.

Sample CSE721-01 : RCAP Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample CSE722-01 : RCAP Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample CSE723-01 : Poor RCAP Ion Balance due to sample matrix. Possibly due to fine particulate matter.

Sample CSE724-01 : Poor RCAP Ion Balance due to sample matrix. Possibly due to fine particulate matter.

Results relate only to the items tested.

Maxxam Job #: B6E7391
Report Date: 2016/07/25

QUALITY ASSURANCE REPORT

Stantec Consulting Ltd
Client Project #: 121414186
Site Location: MEADOWVIEW
Sampler Initials: MP

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4582295	4-Bromofluorobenzene	2016/07/19	100	70 - 130	100	70 - 130	99	%				
4582295	D4-1,2-Dichloroethane	2016/07/19	99	70 - 130	103	70 - 130	104	%				
4582295	D8-Toluene	2016/07/19	100	70 - 130	101	70 - 130	100	%				
4582802	Isobutylbenzene - Volatile	2016/07/19	101	70 - 130	100	70 - 130	104	%				
4583926	Isobutylbenzene - Extractable	2016/07/19	108	30 - 130	102	30 - 130	102	%				
4583926	n-Dotriacontane - Extractable	2016/07/19	102	30 - 130	92	30 - 130	96	%				
4588530	2,4,6-Tribromophenol	2016/07/22	85	10 - 130	87	10 - 130	69	%				
4588530	2-Fluorobiphenyl	2016/07/22	72	30 - 130	63	30 - 130	68	%				
4588530	2-Fluorophenol	2016/07/22	52	10 - 130	55	10 - 130	40	%				
4588530	D14-Terphenyl	2016/07/22	93	30 - 130	96	30 - 130	88	%				
4588530	D5-Nitrobenzene	2016/07/22	77	30 - 130	76	30 - 130	70	%				
4588530	D5-Phenol	2016/07/22	39	10 - 130	42	10 - 130	28	%				
4582295	1,1,1-Trichloroethane	2016/07/19	99	70 - 130	98	70 - 130	<1.0	ug/L				
4582295	1,1,2,2-Tetrachloroethane	2016/07/19	102	70 - 130	101	70 - 130	<0.50	ug/L				
4582295	1,1,2-Trichloroethane	2016/07/19	101	70 - 130	100	70 - 130	<1.0	ug/L				
4582295	1,1-Dichloroethane	2016/07/19	101	70 - 130	100	70 - 130	<2.0	ug/L				
4582295	1,1-Dichloroethylene	2016/07/19	99	70 - 130	99	70 - 130	<0.50	ug/L				
4582295	1,2-Dichlorobenzene	2016/07/19	92	70 - 130	92	70 - 130	<0.50	ug/L				
4582295	1,2-Dichloroethane	2016/07/19	95	70 - 130	94	70 - 130	<1.0	ug/L				
4582295	1,2-Dichloropropane	2016/07/19	96	70 - 130	96	70 - 130	<0.50	ug/L				
4582295	1,3-Dichlorobenzene	2016/07/19	84	70 - 130	91	70 - 130	<1.0	ug/L				
4582295	1,4-Dichlorobenzene	2016/07/19	91	70 - 130	92	70 - 130	<1.0	ug/L				
4582295	Benzene	2016/07/19	93	70 - 130	93	70 - 130	<1.0	ug/L				
4582295	Bromodichloromethane	2016/07/19	98	70 - 130	98	70 - 130	<1.0	ug/L	NC	40		
4582295	Bromoform	2016/07/19	102	70 - 130	101	70 - 130	<1.0	ug/L	NC	40		
4582295	Bromomethane	2016/07/19	93	60 - 140	91	60 - 140	<0.50	ug/L				
4582295	Carbon Tetrachloride	2016/07/19	97	70 - 130	96	70 - 130	<0.50	ug/L				
4582295	Chlorobenzene	2016/07/19	94	70 - 130	95	70 - 130	<1.0	ug/L				
4582295	Chloroethane	2016/07/19	94	60 - 140	93	60 - 140	<8.0	ug/L				
4582295	Chloroform	2016/07/19	95	70 - 130	94	70 - 130	<1.0	ug/L	1.3	40		
4582295	Chloromethane	2016/07/19	98	60 - 140	97	60 - 140	<8.0	ug/L				

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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4582295	cis-1,2-Dichloroethylene	2016/07/19	101	70 - 130	100	70 - 130	<0.50	ug/L				
4582295	cis-1,3-Dichloropropene	2016/07/19	95	70 - 130	96	70 - 130	<0.50	ug/L				
4582295	Dibromochloromethane	2016/07/19	100	70 - 130	99	70 - 130	<1.0	ug/L	NC	40		
4582295	Ethylbenzene	2016/07/19	104	70 - 130	104	70 - 130	<1.0	ug/L				
4582295	Ethylene Dibromide	2016/07/19	104	70 - 130	103	70 - 130	<0.20	ug/L				
4582295	Methylene Chloride(Dichloromethane)	2016/07/19	99	70 - 130	97	70 - 130	<3.0	ug/L				
4582295	o-Xylene	2016/07/19	109	70 - 130	110	70 - 130	<1.0	ug/L				
4582295	p+m-Xylene	2016/07/19	108	70 - 130	109	70 - 130	<2.0	ug/L				
4582295	Styrene	2016/07/19	105	70 - 130	106	70 - 130	<1.0	ug/L				
4582295	Tetrachloroethylene	2016/07/19	99	70 - 130	99	70 - 130	<1.0	ug/L				
4582295	Toluene	2016/07/19	103	70 - 130	103	70 - 130	<1.0	ug/L				
4582295	trans-1,2-Dichloroethylene	2016/07/19	97	70 - 130	97	70 - 130	<0.50	ug/L				
4582295	trans-1,3-Dichloropropene	2016/07/19	92	70 - 130	92	70 - 130	<0.50	ug/L				
4582295	Trichloroethylene	2016/07/19	100	70 - 130	100	70 - 130	<1.0	ug/L				
4582295	Trichlorofluoromethane (FREON 11)	2016/07/19	94	60 - 140	93	60 - 140	<8.0	ug/L				
4582295	Vinyl Chloride	2016/07/19	92	60 - 140	92	60 - 140	<0.50	ug/L				
4582802	Benzene	2016/07/19	106	70 - 130	94	70 - 130	<0.0010	mg/L	NC	40		
4582802	C6 - C10 (less BTEX)	2016/07/19					<0.010	mg/L	NC	40		
4582802	Ethylbenzene	2016/07/19	106	70 - 130	94	70 - 130	<0.0010	mg/L	NC	40		
4582802	Toluene	2016/07/19	105	70 - 130	94	70 - 130	<0.0010	mg/L	NC	40		
4582802	Total Xylenes	2016/07/19	107	70 - 130	95	70 - 130	<0.0020	mg/L	NC	40		
4583894	pH	2016/07/19							0.51	N/A	100	97 - 103
4583896	Conductivity	2016/07/19			102	80 - 120	1.4, RDL=1.0	uS/cm	0.79	25		
4583897	Total Aluminum (Al)	2016/07/21	101	80 - 120	99	80 - 120	<5.0	ug/L	1.9	20		
4583897	Total Antimony (Sb)	2016/07/21	96	80 - 120	95	80 - 120	<1.0	ug/L	NC	20		
4583897	Total Arsenic (As)	2016/07/21	97	80 - 120	95	80 - 120	<1.0	ug/L	NC	20		
4583897	Total Barium (Ba)	2016/07/21	96	80 - 120	93	80 - 120	<1.0	ug/L	2.5	20		
4583897	Total Beryllium (Be)	2016/07/21	99	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
4583897	Total Bismuth (Bi)	2016/07/21	99	80 - 120	96	80 - 120	<2.0	ug/L	NC	20		
4583897	Total Boron (B)	2016/07/21	101	80 - 120	105	80 - 120	<50	ug/L	NC	20		
4583897	Total Cadmium (Cd)	2016/07/21	98	80 - 120	96	80 - 120	<0.010	ug/L	NC	20		

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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4583897	Total Calcium (Ca)	2016/07/21	NC	80 - 120	98	80 - 120	<100	ug/L	0.17	20		
4583897	Total Chromium (Cr)	2016/07/21	99	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
4583897	Total Cobalt (Co)	2016/07/21	99	80 - 120	100	80 - 120	<0.40	ug/L	NC	20		
4583897	Total Copper (Cu)	2016/07/21	99	80 - 120	100	80 - 120	<2.0	ug/L	0.96	20		
4583897	Total Iron (Fe)	2016/07/21	103	80 - 120	102	80 - 120	<50	ug/L	0.52	20		
4583897	Total Lead (Pb)	2016/07/21	97	80 - 120	95	80 - 120	<0.50	ug/L	NC	20		
4583897	Total Magnesium (Mg)	2016/07/21	101	80 - 120	101	80 - 120	<100	ug/L	0.68	20		
4583897	Total Manganese (Mn)	2016/07/21	100	80 - 120	98	80 - 120	<2.0	ug/L	1.1	20		
4583897	Total Molybdenum (Mo)	2016/07/21	101	80 - 120	96	80 - 120	<2.0	ug/L	NC	20		
4583897	Total Nickel (Ni)	2016/07/21	99	80 - 120	100	80 - 120	<2.0	ug/L	NC	20		
4583897	Total Phosphorus (P)	2016/07/21	103	80 - 120	99	80 - 120	<100	ug/L	1.5	20		
4583897	Total Potassium (K)	2016/07/21	100	80 - 120	98	80 - 120	<100	ug/L	1.9	20		
4583897	Total Selenium (Se)	2016/07/21	97	80 - 120	95	80 - 120	<1.0	ug/L	NC	20		
4583897	Total Silver (Ag)	2016/07/21	97	80 - 120	95	80 - 120	<0.10	ug/L	NC	20		
4583897	Total Sodium (Na)	2016/07/21	97	80 - 120	97	80 - 120	<100	ug/L	1.8	20		
4583897	Total Strontium (Sr)	2016/07/21	98	80 - 120	99	80 - 120	<2.0	ug/L	1.8	20		
4583897	Total Thallium (Tl)	2016/07/21	99	80 - 120	95	80 - 120	<0.10	ug/L	NC	20		
4583897	Total Tin (Sn)	2016/07/21	99	80 - 120	99	80 - 120	<2.0	ug/L	NC	20		
4583897	Total Titanium (Ti)	2016/07/21	97	80 - 120	103	80 - 120	<2.0	ug/L	NC	20		
4583897	Total Uranium (U)	2016/07/21	103	80 - 120	98	80 - 120	<0.10	ug/L	NC	20		
4583897	Total Vanadium (V)	2016/07/21	99	80 - 120	99	80 - 120	<2.0	ug/L	NC	20		
4583897	Total Zinc (Zn)	2016/07/21	94	80 - 120	95	80 - 120	<5.0	ug/L	1.9	20		
4583898	pH	2016/07/19							0.61	N/A	100	97 - 103
4583900	Conductivity	2016/07/19			102	80 - 120	1.4, RDL=1.0	uS/cm	0.30	25		
4583904	pH	2016/07/19							0.64	N/A	100	97 - 103
4583907	Conductivity	2016/07/19			101	80 - 120	1.5, RDL=1.0	uS/cm	1.4	25		
4583908	pH	2016/07/19							0.62	N/A	100	97 - 103
4583910	Conductivity	2016/07/19			101	80 - 120	1.5, RDL=1.0	uS/cm	0.24	25		
4583911	pH	2016/07/19							1.1	N/A	100	97 - 103
4583912	Conductivity	2016/07/19			102	80 - 120	1.5, RDL=1.0	uS/cm	0.80	25		
4583926	>C10-C16 Hydrocarbons	2016/07/19	93	70 - 130	96	70 - 130	<0.050	mg/L	NC	40		

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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4583926	>C16-C21 Hydrocarbons	2016/07/19	87	70 - 130	90	70 - 130	<0.050	mg/L	NC	40		
4583926	>C21-<C32 Hydrocarbons	2016/07/19	86	70 - 130	90	70 - 130	<0.10	mg/L	NC	40		
4583977	Dissolved Aluminum (Al)	2016/07/21	108	80 - 120	108	80 - 120	<5.0	ug/L	1.3	20		
4583977	Dissolved Antimony (Sb)	2016/07/21	106	80 - 120	106	80 - 120	<1.0	ug/L	NC	20		
4583977	Dissolved Arsenic (As)	2016/07/21	97	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
4583977	Dissolved Barium (Ba)	2016/07/21	106	80 - 120	107	80 - 120	<1.0	ug/L	NC	20		
4583977	Dissolved Beryllium (Be)	2016/07/21	97	80 - 120	96	80 - 120	<1.0	ug/L	NC	20		
4583977	Dissolved Bismuth (Bi)	2016/07/21	106	80 - 120	107	80 - 120	<2.0	ug/L	NC	20		
4583977	Dissolved Boron (B)	2016/07/21	96	80 - 120	94	80 - 120	<50	ug/L	NC	20		
4583977	Dissolved Cadmium (Cd)	2016/07/21	102	80 - 120	100	80 - 120	<0.010	ug/L	NC	20		
4583977	Dissolved Calcium (Ca)	2016/07/21	104	80 - 120	104	80 - 120	<100	ug/L	0.77	20		
4583977	Dissolved Chromium (Cr)	2016/07/21	99	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
4583977	Dissolved Cobalt (Co)	2016/07/21	99	80 - 120	99	80 - 120	<0.40	ug/L	NC	20		
4583977	Dissolved Copper (Cu)	2016/07/21	98	80 - 120	99	80 - 120	<2.0	ug/L	NC	20		
4583977	Dissolved Iron (Fe)	2016/07/21	102	80 - 120	103	80 - 120	<50	ug/L	NC	20		
4583977	Dissolved Lead (Pb)	2016/07/21	107	80 - 120	107	80 - 120	<0.50	ug/L	NC	20		
4583977	Dissolved Magnesium (Mg)	2016/07/21	103	80 - 120	103	80 - 120	<100	ug/L	NC	20		
4583977	Dissolved Manganese (Mn)	2016/07/21	102	80 - 120	103	80 - 120	<2.0	ug/L	NC	20		
4583977	Dissolved Molybdenum (Mo)	2016/07/21	106	80 - 120	102	80 - 120	<2.0	ug/L	NC	20		
4583977	Dissolved Nickel (Ni)	2016/07/21	99	80 - 120	98	80 - 120	<2.0	ug/L	NC	20		
4583977	Dissolved Phosphorus (P)	2016/07/21	105	80 - 120	107	80 - 120	<100	ug/L	NC	20		
4583977	Dissolved Potassium (K)	2016/07/21	103	80 - 120	103	80 - 120	<100	ug/L	NC	20		
4583977	Dissolved Selenium (Se)	2016/07/21	98	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
4583977	Dissolved Silver (Ag)	2016/07/21	101	80 - 120	99	80 - 120	<0.10	ug/L	NC	20		
4583977	Dissolved Sodium (Na)	2016/07/21	99	80 - 120	99	80 - 120	<100	ug/L	0.38	20		
4583977	Dissolved Strontium (Sr)	2016/07/21	105	80 - 120	105	80 - 120	<2.0	ug/L	NC	20		
4583977	Dissolved Thallium (Tl)	2016/07/21	108	80 - 120	106	80 - 120	<0.10	ug/L	NC	20		
4583977	Dissolved Tin (Sn)	2016/07/21	107	80 - 120	107	80 - 120	<2.0	ug/L	NC	20		
4583977	Dissolved Titanium (Ti)	2016/07/21	103	80 - 120	104	80 - 120	<2.0	ug/L	NC	20		
4583977	Dissolved Uranium (U)	2016/07/21	111	80 - 120	110	80 - 120	<0.10	ug/L	NC	20		
4583977	Dissolved Vanadium (V)	2016/07/21	100	80 - 120	101	80 - 120	<2.0	ug/L	NC	20		

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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4583977	Dissolved Zinc (Zn)	2016/07/21	100	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
4584019	Turbidity	2016/07/19			99	80 - 120	<0.10	NTU	NC	20	98	80 - 120
4584024	Turbidity	2016/07/19			98	80 - 120	<0.10	NTU	2.1	20	99	80 - 120
4585707	Turbidity	2016/07/20			99	80 - 120	<0.10	NTU	7.6	20	98	80 - 120
4585712	Turbidity	2016/07/20			98	80 - 120	<0.10	NTU	NC	20	98	80 - 120
4585973	Total Organic Carbon (C)	2016/07/21	98	80 - 120	112	80 - 120	<0.50	mg/L	NC	20		
4586193	Total Organic Carbon (C)	2016/07/21	113	80 - 120	112	80 - 120	<0.50	mg/L	7.1	20		
4586401	Total Alkalinity (Total as CaCO3)	2016/07/22	NC	80 - 120	103	80 - 120	<5.0	mg/L	1.4	25		
4586409	Dissolved Chloride (Cl)	2016/07/22	NC	80 - 120	102	80 - 120	<1.0	mg/L	4.3	25	106	80 - 120
4586410	Dissolved Sulphate (SO4)	2016/07/22	NC	80 - 120	104	80 - 120	<2.0	mg/L	5.5	25		
4586412	Reactive Silica (SiO2)	2016/07/21	NC	80 - 120	99	80 - 120	<0.50	mg/L	1.2	25		
4586414	Colour	2016/07/21			97	80 - 120	<5.0	TCU	NC	20		
4586415	Orthophosphate (P)	2016/07/22	93	80 - 120	96	80 - 120	<0.010	mg/L	NC	25		
4586417	Nitrate + Nitrite (N)	2016/07/22	99	80 - 120	103	80 - 120	<0.050	mg/L	NC	25		
4586419	Nitrite (N)	2016/07/22	91	80 - 120	98	80 - 120	<0.010	mg/L	NC	25		
4586424	Total Alkalinity (Total as CaCO3)	2016/07/22	106	80 - 120	104	80 - 120	<5.0	mg/L	NC	25		
4586426	Dissolved Chloride (Cl)	2016/07/22	NC	80 - 120	103	80 - 120	<1.0	mg/L	2.4	25	106	80 - 120
4586428	Dissolved Sulphate (SO4)	2016/07/22	120	80 - 120	103	80 - 120	<2.0	mg/L	NC	25		
4586433	Reactive Silica (SiO2)	2016/07/21	NC	80 - 120	98	80 - 120	<0.50	mg/L	1.1	25		
4586439	Colour	2016/07/21			106	80 - 120	<5.0	TCU	4.9	20		
4586445	Orthophosphate (P)	2016/07/22	86	80 - 120	96	80 - 120	<0.010	mg/L	NC	25		
4586447	Nitrate + Nitrite (N)	2016/07/22	103	80 - 120	104	80 - 120	<0.050	mg/L	3.5	25		
4586455	Nitrite (N)	2016/07/22	84	80 - 120	94	80 - 120	<0.010	mg/L	NC	25		
4587845	Dissolved Aluminum (Al)	2016/07/21	107	80 - 120	106	80 - 120	<5.0	ug/L	NC	20		
4587845	Dissolved Antimony (Sb)	2016/07/21	104	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
4587845	Dissolved Arsenic (As)	2016/07/21	101	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
4587845	Dissolved Barium (Ba)	2016/07/21	103	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
4587845	Dissolved Beryllium (Be)	2016/07/21	102	80 - 120	103	80 - 120	<1.0	ug/L	NC	20		
4587845	Dissolved Bismuth (Bi)	2016/07/21	105	80 - 120	103	80 - 120	<2.0	ug/L	NC	20		
4587845	Dissolved Boron (B)	2016/07/21	100	80 - 120	102	80 - 120	<50	ug/L	NC	20		
4587845	Dissolved Cadmium (Cd)	2016/07/21	103	80 - 120	102	80 - 120	<0.010	ug/L	NC	20		

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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4587845	Dissolved Calcium (Ca)	2016/07/21	104	80 - 120	103	80 - 120	<100	ug/L	0.75	20		
4587845	Dissolved Chromium (Cr)	2016/07/21	102	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
4587845	Dissolved Cobalt (Co)	2016/07/21	102	80 - 120	103	80 - 120	<0.40	ug/L	NC	20		
4587845	Dissolved Copper (Cu)	2016/07/21	103	80 - 120	105	80 - 120	<2.0	ug/L	NC	20		
4587845	Dissolved Iron (Fe)	2016/07/21	105	80 - 120	105	80 - 120	<50	ug/L	NC	20		
4587845	Dissolved Lead (Pb)	2016/07/21	104	80 - 120	102	80 - 120	<0.50	ug/L	NC	20		
4587845	Dissolved Magnesium (Mg)	2016/07/21	106	80 - 120	106	80 - 120	<100	ug/L	0.68	20		
4587845	Dissolved Manganese (Mn)	2016/07/21	103	80 - 120	103	80 - 120	<2.0	ug/L	NC	20		
4587845	Dissolved Molybdenum (Mo)	2016/07/21	105	80 - 120	103	80 - 120	<2.0	ug/L	NC	20		
4587845	Dissolved Nickel (Ni)	2016/07/21	104	80 - 120	103	80 - 120	<2.0	ug/L	NC	20		
4587845	Dissolved Phosphorus (P)	2016/07/21	108	80 - 120	107	80 - 120	<100	ug/L	NC	20		
4587845	Dissolved Potassium (K)	2016/07/21	103	80 - 120	103	80 - 120	<100	ug/L	2.7	20		
4587845	Dissolved Selenium (Se)	2016/07/21	103	80 - 120	102	80 - 120	<1.0	ug/L	NC	20		
4587845	Dissolved Silver (Ag)	2016/07/21	103	80 - 120	102	80 - 120	<0.10	ug/L	NC	20		
4587845	Dissolved Sodium (Na)	2016/07/21	NC	80 - 120	102	80 - 120	<100	ug/L	1.3	20		
4587845	Dissolved Strontium (Sr)	2016/07/21	NC	80 - 120	102	80 - 120	<2.0	ug/L	3.0	20		
4587845	Dissolved Thallium (Tl)	2016/07/21	104	80 - 120	103	80 - 120	<0.10	ug/L	NC	20		
4587845	Dissolved Tin (Sn)	2016/07/21	107	80 - 120	105	80 - 120	<2.0	ug/L	NC	20		
4587845	Dissolved Titanium (Ti)	2016/07/21	103	80 - 120	104	80 - 120	<2.0	ug/L	NC	20		
4587845	Dissolved Uranium (U)	2016/07/21	107	80 - 120	106	80 - 120	<0.10	ug/L	0.67	20		
4587845	Dissolved Vanadium (V)	2016/07/21	104	80 - 120	102	80 - 120	<2.0	ug/L	NC	20		
4587845	Dissolved Zinc (Zn)	2016/07/21	102	80 - 120	103	80 - 120	<5.0	ug/L	NC	20		
4587899	Nitrogen (Ammonia Nitrogen)	2016/07/22	NC	80 - 120	104	80 - 120	0.074, RDL=0.050	mg/L	14	20		
4587902	Nitrogen (Ammonia Nitrogen)	2016/07/21	102	80 - 120	108	80 - 120	<0.050	mg/L	NC	20		
4588530	1,2,3,4-Tetrachlorobenzene	2016/07/22	63	30 - 130	57	30 - 130	<0.50	ug/L	NC	40		
4588530	1,2,3,5-Tetrachlorobenzene	2016/07/22	61	30 - 130	58	30 - 130	<0.50	ug/L	NC	40		
4588530	1,2,3-Trichlorobenzene	2016/07/22	55	30 - 130	51	30 - 130	<0.50	ug/L	NC	40		
4588530	1,2,4,5-Tetrachlorobenzene	2016/07/22	57	30 - 130	50	30 - 130	<0.50	ug/L	NC	40		
4588530	1,2,4-Trichlorobenzene	2016/07/22	52	30 - 130	48	30 - 130	<0.50	ug/L	NC	40		
4588530	1,2-Dichlorobenzene	2016/07/22	53	30 - 130	48	30 - 130	<0.50	ug/L	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

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Site Location: MEADOWVIEW
Sampler Initials: MP

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4588530	1,3,5-Trichlorobenzene	2016/07/22	63	30 - 130	58	30 - 130	<0.50	ug/L	NC	40		
4588530	1,3-Dichlorobenzene	2016/07/22	48	30 - 130	43	30 - 130	<0.50	ug/L	NC	40		
4588530	1,4-Dichlorobenzene	2016/07/22	49	30 - 130	45	30 - 130	<0.50	ug/L	NC	40		
4588530	1-Chloronaphthalene	2016/07/22	63	30 - 130	60	30 - 130	<1.0	ug/L	NC	40		
4588530	1-Methylnaphthalene	2016/07/22	64	30 - 130	60	30 - 130	<0.20	ug/L	NC	40		
4588530	2,3,4,5-Tetrachlorophenol	2016/07/22	91	10 - 130	86	10 - 130	<0.40	ug/L	NC	40		
4588530	2,3,4,6-Tetrachlorophenol	2016/07/22	94	10 - 130	88	10 - 130	<0.50	ug/L	NC	40		
4588530	2,3,4-Trichlorophenol	2016/07/22	87	10 - 130	84	10 - 130	<0.50	ug/L	NC	40		
4588530	2,3,5,6-Tetrachlorophenol	2016/07/22	63	10 - 130	78	10 - 130	<0.50	ug/L	NC	40		
4588530	2,3,5-Trichlorophenol	2016/07/22	100	10 - 130	95	10 - 130	<0.50	ug/L	NC	40		
4588530	2,3,6-Trichlorophenol	2016/07/22	82	10 - 130	83	10 - 130	<0.50	ug/L	NC	40		
4588530	2,3-Dichlorophenol	2016/07/22	77	10 - 130	73	10 - 130	<0.50	ug/L	NC	40		
4588530	2,4,5-Trichlorophenol	2016/07/22	93	10 - 130	85	10 - 130	<0.50	ug/L	NC	40		
4588530	2,4,6-Trichlorophenol	2016/07/22	86	10 - 130	84	10 - 130	<0.50	ug/L	NC	40		
4588530	2,4-Dichlorophenol	2016/07/22	66	10 - 130	69	10 - 130	<0.30	ug/L	NC	40		
4588530	2,4-Dimethylphenol	2016/07/22	18	10 - 130	55	10 - 130	<0.50	ug/L	NC	40		
4588530	2,4-Dinitrophenol	2016/07/22	66	10 - 130	81	10 - 130	<2.0	ug/L	NC	40		
4588530	2,4-Dinitrotoluene	2016/07/22	91	30 - 130	93	30 - 130	<0.50	ug/L	NC	40		
4588530	2,5-Dichlorophenol	2016/07/22	85	10 - 130	78	10 - 130	<0.50	ug/L	NC	40		
4588530	2,6-Dichlorophenol	2016/07/22	77	10 - 130	74	10 - 130	<0.50	ug/L	NC	40		
4588530	2,6-Dinitrotoluene	2016/07/22	91	30 - 130	92	30 - 130	<0.50	ug/L	NC	40		
4588530	2-Chloronaphthalene	2016/07/22	72	30 - 130	68	30 - 130	<0.50	ug/L	NC	40		
4588530	2-Chlorophenol	2016/07/22	74	10 - 130	72	10 - 130	<0.30	ug/L	NC	40		
4588530	2-Methylnaphthalene	2016/07/22	64	30 - 130	59	30 - 130	<0.20	ug/L	NC	40		
4588530	2-Nitrophenol	2016/07/22	76	10 - 130	73	10 - 130	<0.50	ug/L	NC	40		
4588530	3,3'-Dichlorobenzidine	2016/07/22	19 (1)	30 - 130	89	30 - 130	<0.50	ug/L	NC	40		
4588530	3,4,5-Trichlorophenol	2016/07/22	92	10 - 130	94	10 - 130	<0.50	ug/L	NC	40		
4588530	3,4-Dichlorophenol	2016/07/22	98	10 - 130	95	10 - 130	<0.50	ug/L	NC	40		
4588530	3,5-Dichlorophenol	2016/07/22	100	10 - 130	97	10 - 130	<0.50	ug/L	NC	40		
4588530	4,6-Dinitro-2-methylphenol	2016/07/22	80	10 - 130	92	10 - 130	<2.0	ug/L	NC	40		
4588530	4-Bromophenyl phenyl ether	2016/07/22	81	30 - 130	76	30 - 130	<0.30	ug/L	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

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Site Location: MEADOWVIEW
Sampler Initials: MP

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4588530	4-Chloro-3-Methylphenol	2016/07/22	78	10 - 130	79	10 - 130	<0.50	ug/L	NC	40		
4588530	4-Chlorophenyl phenyl ether	2016/07/22	77	30 - 130	74	30 - 130	<0.50	ug/L	NC	40		
4588530	4-Nitrophenol	2016/07/22	59	10 - 130	49	10 - 130	<1.4	ug/L	NC	40		
4588530	Acenaphthene	2016/07/22	81	30 - 130	79	30 - 130	<0.20	ug/L	NC	40		
4588530	Acenaphthylene	2016/07/22	90	30 - 130	83	30 - 130	<0.20	ug/L	NC	40		
4588530	Anthracene	2016/07/22	87	30 - 130	87	30 - 130	<0.20	ug/L	NC	40		
4588530	Benzo(a)anthracene	2016/07/22	93	30 - 130	94	30 - 130	<0.20	ug/L	NC	40		
4588530	Benzo(a)pyrene	2016/07/22	103	30 - 130	96	30 - 130	<0.20	ug/L	NC	40		
4588530	Benzo(b/j)fluoranthene	2016/07/22	99	30 - 130	97	30 - 130	<0.20	ug/L	NC	40		
4588530	Benzo(g,h,i)perylene	2016/07/22	71	30 - 130	98	30 - 130	<0.20	ug/L	NC	40		
4588530	Benzo(k)fluoranthene	2016/07/22	102	30 - 130	106	30 - 130	<0.20	ug/L	NC	40		
4588530	Benzyl butyl phthalate	2016/07/22	101	30 - 130	96	30 - 130	<0.50	ug/L	NC	40		
4588530	Biphenyl	2016/07/22	70	30 - 130	68	30 - 130	<0.50	ug/L	NC	40		
4588530	Bis(2-chloroethoxy)methane	2016/07/22	72	30 - 130	70	30 - 130	<0.50	ug/L	NC	40		
4588530	Bis(2-chloroethyl)ether	2016/07/22	84	30 - 130	68	30 - 130	<0.50	ug/L	NC	40		
4588530	Bis(2-chloroisopropyl)ether	2016/07/22	70	30 - 130	65	30 - 130	<0.50	ug/L	NC	40		
4588530	Bis(2-ethylhexyl)phthalate	2016/07/22	98	30 - 130	96	30 - 130	<2.0	ug/L	NC	40		
4588530	Chrysene	2016/07/22	94	30 - 130	102	30 - 130	<0.20	ug/L	NC	40		
4588530	Dibenz(a,h)anthracene	2016/07/22	78	30 - 130	97	30 - 130	<0.20	ug/L	NC	40		
4588530	Diethyl phthalate	2016/07/22	78	30 - 130	78	30 - 130	<1.0	ug/L	NC	40		
4588530	Dimethyl phthalate	2016/07/22	86	30 - 130	85	30 - 130	<1.0	ug/L	NC	40		
4588530	Di-N-butyl phthalate	2016/07/22	96	30 - 130	96	30 - 130	<2.0	ug/L	NC	40		
4588530	Di-N-octyl phthalate	2016/07/22	115	30 - 130	105	30 - 130	<0.80	ug/L	NC	40		
4588530	Diphenyl Ether	2016/07/22	74	30 - 130	69	30 - 130	<0.30	ug/L	NC	40		
4588530	Fluoranthene	2016/07/22	95	30 - 130	94	30 - 130	<0.20	ug/L	NC	40		
4588530	Fluorene	2016/07/22	86	30 - 130	86	30 - 130	<0.20	ug/L	NC	40		
4588530	Hexachlorobenzene	2016/07/22	79	30 - 130	82	30 - 130	<0.50	ug/L	NC	40		
4588530	Hexachlorobutadiene	2016/07/22	48	30 - 130	43	30 - 130	<0.40	ug/L	NC	40		
4588530	Hexachlorocyclopentadiene	2016/07/22	38	30 - 130	40	30 - 130	<2.0	ug/L	NC	40		
4588530	Hexachloroethane	2016/07/22	50	30 - 130	44	30 - 130	<0.50	ug/L	NC	40		
4588530	Indeno(1,2,3-cd)pyrene	2016/07/22	77	30 - 130	98	30 - 130	<0.20	ug/L	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

Stantec Consulting Ltd
Client Project #: 121414186
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Sampler Initials: MP

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4588530	Isophorone	2016/07/22	69	30 - 130	73	30 - 130	<0.50	ug/L	NC	40		
4588530	m/p-Cresol	2016/07/22	53	10 - 130	69	10 - 130	<0.50	ug/L	NC	40		
4588530	Naphthalene	2016/07/22	86	30 - 130	67	30 - 130	<0.20	ug/L	NC	40		
4588530	Nitrobenzene	2016/07/22	77	30 - 130	75	30 - 130	<0.50	ug/L	NC	40		
4588530	Nitrosodiphenylamine/Diphenylamine	2016/07/22	77	30 - 130	74	30 - 130	<1.0	ug/L	NC	40		
4588530	N-Nitroso-di-n-propylamine	2016/07/22	76	30 - 130	77	30 - 130	<0.50	ug/L	NC	40		
4588530	o-Cresol	2016/07/22	45	10 - 130	63	10 - 130	<0.50	ug/L	NC	40		
4588530	p-Chloroaniline	2016/07/22	31	30 - 130	59	30 - 130	<1.0	ug/L	NC	40		
4588530	Pentachlorobenzene	2016/07/22	62	30 - 130	57	30 - 130	<0.50	ug/L	NC	40		
4588530	Pentachlorophenol	2016/07/22	48	10 - 130	71	10 - 130	<1.0	ug/L	NC	40		
4588530	Perylene	2016/07/22	87	30 - 130	94	30 - 130	<0.20	ug/L	NC	40		
4588530	Phenanthrene	2016/07/22	89	30 - 130	89	30 - 130	<0.20	ug/L	NC	40		
4588530	Phenol	2016/07/22	43	10 - 130	47	10 - 130	<0.50	ug/L	NC	40		
4588530	Pyrene	2016/07/22	98	30 - 130	99	30 - 130	<0.20	ug/L	NC	40		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The recovery was below the lower control limit. This may represent a low bias in some results for this specific analyte.

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Client Project #: 121414186
Site Location: MEADOWVIEW
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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

Mike MacGillivray, Scientific Specialist (Inorganics)

Rosemarie MacDonald, Scientific Specialist (Organics)

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Appendix G

Photos



Photo G.1 - Upstream view of REF site at Black Brook. July 15, 2016



Photo G.2 - Downstream view of REF site at Black Brook. July 15, 2016



Photo G.3 - Left bank view of REF site at Black Brook. July 15, 2016



Photo G.4 - Right bank view of REF site at Black Brook. July 15, 2016



Photo G.5 - Substrate view of REF site at Black Brook. July 15, 2016



Photo G.6 - *Gasterosteus* sp. (58 mm) Caught in REF site at Black Brook. July 15, 2016



Photo G.7 - Upstream view of SW7 site at West Tributary. July 15, 2016

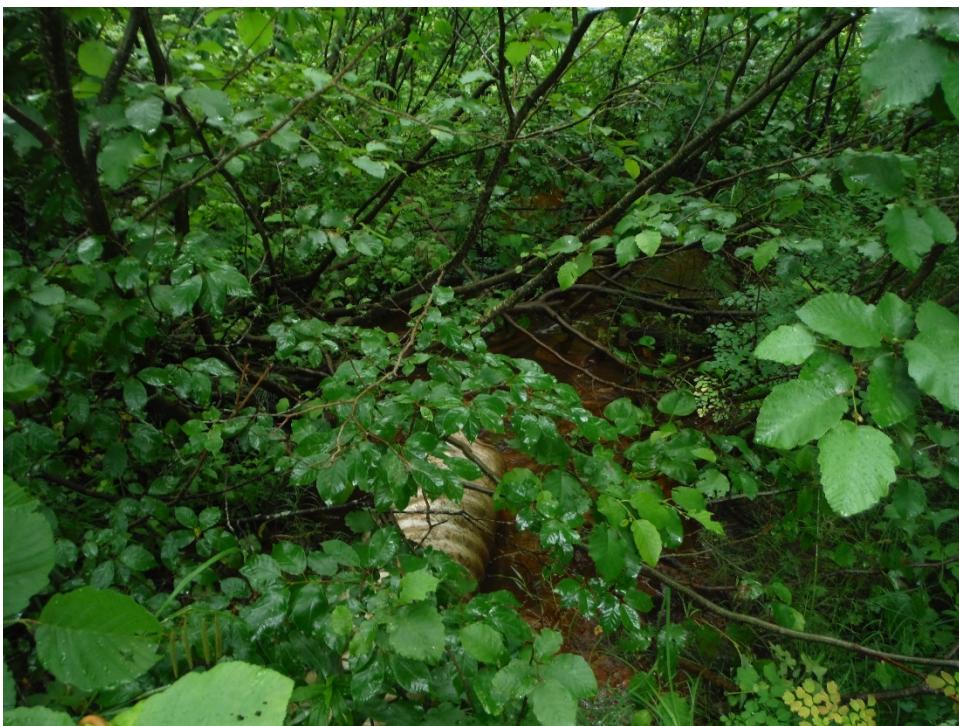


Photo G.8 - Downstream view of SW7 site at West Tributary. July 15, 2016



Photo G.9 - Left bank view of SW7 site at West Tributary. July 15, 2016



Photo G.10 - Right bank view of SW7 site at West Tributary. July 15, 2016



Photo G.11 - Substrate view of SW7 site at West Tributary. July 15, 2016



Photo G.12 - Pollution (broken toilet) in SW7 site at West Tributary. July 15, 2016



Photo G.13 - *Gasterosteus* sp. (48 mm) Caught in SW7 site at West Tributary. July 15, 2016



Photo G.14 - Upstream view of SW7A site at West Tributary. July 15, 2016



Photo G.15 - Downstream view of SW7A site at West Tributary. July 15, 2016



Photo G.16 - Left bank view of SW7A site at West Tributary. July 15, 2016



Photo G.17 - Right bank view of SW7A site at West Tributary. July 15, 2016



Photo G.18 - Substrate view of SW7A site at West Tributary. July 15, 2016

Appendix H
Benthic Invertebrate Lab Report

**ANALYSIS OF
BENTHIC INVERTEBRATE SPECIES COMPOSITION IN
KICKNET (D-NET) SAMPLES—
MEADOWVIEW LANDFILL
(Project #121414186)**

Report to:

Stantec
Dartmouth, Nova Scotia

September 2016

By

Envirosphere Consultants Limited
Windsor, Nova Scotia

Lab Number: 2016-39

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**ANALYSIS OF BENTHIC INVERTEBRATE SPECIES COMPOSITION IN
KICKNET (D-NET) SAMPLES
-MEADOWVIEW LANDFILL-**

for

Stantec
Dartmouth, Nova Scotia

September 2016

INTRODUCTION

Stantec provided three ‘kicknet (d-net)’ samples to Envirosphere Consultants Limited, Windsor, Nova Scotia on July 15, 2016 for biological analysis (identification and assessment for biological species composition and abundance). The three samples (3 x 2L) contained organisms in preservative collected from three sites on July 15, 2016. The results of the analysis are presented in this report.

METHODS

SUB-SAMPLING

Prior to sorting, samples and sub-samples were rinsed on a 0.5 mm 20 cm diameter circular sieve to remove preservative. To ensure a reasonable processing time, samples were then sub-sampled at 50% or 25% to ensure processing efficiency. Sub-sampling involved dividing the sample in two or four, by weight. The sample was spread evenly in the sieve and divided, with halves or fourths transferred in their entirety into plastic trays. The trays with contents were weighed and verified to be within 0.5 to 1.0 gram of each other to ensure even distribution of the material. One of the two or four trays were randomly selected for sorting and identification, and the others were held until the final sample analysis was completed, to allow an opportunity for further analysis if necessary to ensure adequate counts for interpretation. Final counts and biomass for the sub-samples were extrapolated to 100%, based on the sub-sample percentage (i.e. 25% or 50%). Sub-sampling can affect measures of animal abundance and biomass by increasing variability, and may lead to slightly reduced estimates of taxon richness compared to whole samples.

SORTING AND IDENTIFICATION

Sub-samples were examined at 6 to 6.4x magnification on a stereomicroscope, with a final brief check at 16x. Organisms were removed, and subsequently stored in labeled vials in 70% isopropyl alcohol. Sorting efficiency for lab personnel is checked periodically by re-sorting samples, to ensure average recovery levels of 90% or better. Wet weight biomass (grams per sample) was estimated for each sample by weighing animals to the nearest milligram at the time of sorting, after blotting to remove surface water.

Organisms were identified to an appropriate taxonomic level, typically to genus, using conventional literature for the groups involved (see Attachment 1). Organisms were identified by Heather Levy (B.Sc. Honours) and verified by Valerie Kendall (M.Env.Sc.) of Envirosphere Consultants. Sorting of animals from the samples,

identification, total number of animals of each type (taxonomic group), as well as total abundance, were determined for each sample. These numbers were used to calculate several indices of benthic community health, which can be compared between sites and, with time, at each site (an index of community health is like a body mass index or an IQ, which gives a single number that can be used to compare individuals or things). Indices calculated are all commonly used in studies of this kind and include: EPT Ratio (ratio of abundance of mayflies (Ephemeroptera), caddisflies (Trichoptera), and stoneflies (Plecoptera), to total numbers of organisms); Total Abundance (number of animals in the sample and per unit area); and Taxon Richness (number of taxa per sample) (Table 2). Abundance in kicknet samples was expressed on a per sample basis. All organisms present were included in estimates, with the exception of organisms listed as ‘other’ (Table 2).

RESULTS

Sediment descriptions for samples are presented in Table 1. Species identifications, abundance, and biomass measures are presented in Table 2.

Samples were dominated in numbers by Diptera (fly) larvae, principally midges (Chironomidae) at all sites, and phantom crane fly larvae (Ptychopteridae) at sites 7 and 7A; and by juvenile clams (Bivalves), predominantly Sphaeriidae at all sites. Dobsonfly/alderfly larvae (Megaloptera), oligochaetes (aquatic worms) and crustaceans occurred frequently at sites, as well as minor amounts of various other organisms such as aquatic beetle larvae (Coleoptera) and water mites (Hydrachnidia). Mayfly (Ephemeroptera) and caddisfly (Trichoptera) larvae occurred at two of the three sites and stonefly larvae (Plecoptera) occurred at one of the three sites (Reference). Crustaceans included the amphipod *Hyalella azteca* (found at sites 7 and Reference), ostracods (found at sites 7 and 7A) and copepods (found at all sites). Overall abundance was low to moderate (838 – 2012 individuals/m²) and taxon richness moderate to high (16 – 29 taxa). EPT ratios, which indicate high water quality due to the requirement of the component EPT taxa for clean, oxygenated water, were low to moderate at sites 7 and Reference (1.77 – 14.1%, respectively) and zero (e.g. none of the indicator EPT groups were present) at Site 7A.

Table 1. Characteristics of sediments in kicknet samples, Meadowview Landfill, Stantec, collected July 15, 2016.

Sample	Sediment Description
Site 7	Silt with organics (woody, leafy and other organic debris) and occasional sand and animal casings.
Site 7A	Abundant woody, leafy and other organic debris with silt, and fine to medium sand. Occasional bits of plastic present.
Reference	Medium to fine sand and occasional pebble; woody, leafy & other organic debris, as well as animal casings.

Grain size classes: cobble = 6.4 cm and larger; pebble/gravel = 4 mm to 6.4 cm; sand = 0.063 mm to 2 mm; silt = 0.004 mm to 0.063 mm; clay = <0.004 mm.

Table 2. Species composition in kick-net samples from Meadowview Landfill, Stantec. Collected July 15, 2016.

Site Number	Site 7	Site 7A	Reference
Sample Date	07/15/16	07/15/16	07/15/16
Abundance per Sample			
INSECTA			
Diptera			
Certapogonidae- <i>Atrichopogon</i> sp	2	4	12
Certapogonidae- <i>Probezzia/Bezzia?</i> sp	2	0	0
Chironomidae	596	844	334
Chironomidae pupae	10	8	2
Diptera	4	0	0
Diptera pupae	0	4	0
Empididae	6	0	2
Ptychopteridae- <i>Bittacomorpha</i> sp	4	56	0
Ptychopteridae	56	136	0
Simuliidae	0	0	2
Tabanidae- <i>Chrysops</i> sp	0	0	2
Tipulidae	2	0	0
Ephemeroptera			
Ephemerellidae- <i>Eurylophella</i> sp	0	0	4
Ephemeroptera	18	0	10
Plecoptera			
Plecoptera	0	0	84
Trichoptera			
Hydroptilidae- <i>Oxyethira</i> sp	0	0	2
Lepidostomatidae- <i>Lepidostoma</i> sp	4	0	0
Leptoceridae- <i>Mystacides?</i> sp	0	0	2
Limnephilidae- <i>Pycnopsyche?</i> sp	0	0	8
Phryganeidae- <i>Oligostomis</i> sp	0	0	6
Rhyacophilidae- <i>Rhyacophila</i> sp	0	0	2
Megaloptera			
Sialidae- <i>Sialis</i> sp	70	164	2
Odonata			
Cordulegastridae- <i>Cordulegaster</i> sp	0	0	2
Coleoptera			
Dytiscidae <i>Agabus</i> sp	6	4	4
Dytiscidae <i>Potamonectes</i> sp	0	0	10
Hydrophilidae- <i>Helophorus</i> sp	8	0	0
Collembola			
Collembola (springtails)	22	8	0
Hemiptera			
Aphidae	0	0	4
Gerridae	2	0	4

Table 2. Species composition in kick-net samples from Meadowview Landfill, Stantec. Collected July 15, 2016.

Site Number	Site 7	Site 7A	Reference
Sample Date	07/15/16	07/15/16	07/15/16
Abundance per Sample			
INSECTA			
Hirundea			
<i>Helobdella stagnalis</i>	0	0	4
Mollusca			
Gastropoda- <i>Pseudosuccinea?</i> sp	0	0	4
Sphaeriidae- <i>Pisidium</i> sp	26	24	0
Sphaeriidae juv.	170	248	24
Crustacea			
Copepoda	8	36	10
Amphipoda- <i>Hyalella azteca</i>	2	0	144
Ostracoda	126	128	0
Nematoda			
Nematoda	10	0	0
Oligochaeta			
Unidentified	86	328	10
Hydrachnidia			
Hydrachnidia sp. A	2	0	0
Hydrachnidia sp. B	2	0	0
Hydrachnidia sp. C	0	16	136
Hydrachnidia sp. D	0	4	6
Hydrachnidia sp. E	0	0	2
Other			
Insecta sp A	2	0	0
Homoptera-Cercopidae	0	0	2
Homoptera-Fulgoridae	0	0	2
Summary (excluding Other)			
Abundance (total # of organisms)	1246	2012	838
Taxon Richness (# of taxa)	26	16	29
EPT Ratio (%)	1.77	0	14.1
Biomass (grams wet weight)	0.689	1.25	1.97

ATTACHMENT 1 – TAXONOMIC LITERATURE

- Borror, D.J. and R.E. White. 1970. Insects. Peterson Field Guides, Houghton Mifflin Company.
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