ALAMOS GOLD INC.

Lynn Lake Gold Project: Gordon Mine Pit Dewatering Notice of Alteration/Notice of Change

Federal Information Request Responses

Stantec

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Introduction

The Impact Assessment Agency of Canada (IAAC) provided information requests (IRs) on August 12, 2024, for the Lynn Lake Gold Project (LLGP) Notice of Change (NOC) – Dewatering of Historical Pits at the Gordon Site during Project Construction, submitted by Alamos Gold Inc. (Alamos) on February 9, 2024. Upon review of the NOC, IAAC has determined that additional information is required to proceed with the analysis of this proposed alteration. This dewatering alteration relates to the construction phase for the Gordon Gold Mine. The Gordon Gold Mine is regulated under the federal Decision Statement issued under Section 54 of the *Canadian Environmental Assessment Act*, 2012 (issued March 5, 2023, and amended July 28, 2024) and the conditions stipulated therein.

Alamos confirms that the IRs provided for this NOC have been fully addressed and answered as clearly and succinctly as possible. A fulsome response to the IRs is provided in the following sections in reference to the original request. Attachments to the responses, as applicable, are provided in Appendix A.

Alamos has undertaken the following while responding to the IRs:

- Considered the context and rationale for the required information for each IR.
- Provided additional information (wherever possible) to address uncertainty and to provide clearly defined, detailed follow-up program measures, including additional proposed mitigation measures.
- Presented complete or summarized information and discussion within the IR responses, rather than limited responses referencing applicable reports.

Alamos is committed to discussing and resolving any further IRs throughout the NOC review process. A total of 12 IRs were received (NOC-02-01 through NOC-02-12) and responses are provided in the following tables.

RESPONSE TO NOC-02-01

ID:	**NOC-02-01**
Expert Department or Group:	Environment and Climate Change Canada
Context and Rationale:	**Context:** Section 2.1 of the Assessment Model Report states that the Hughes River water quality, aerated pit water quality, and model results were screened against: Schedule 4 MDMER effluent limits, Canadian Water Quality Guidelines for the Protection of Aquatic Life, and Manitoba Water Quality Standards, Objectives, and Guidelines. Input concentrations for modelling of selected parameters were provided in Table 3, a summary of mixed conditions was provided in Table 6, and complete data on inputs and results were provided in Appendices A1, D1, E1, F1, F2, and F3. All data inputs and outputs were compared to the screening criteria, though the specific screening criteria applied to each parameter is not explicitly stated in any of the documentation. Without a list of specific screening criteria, it is unclear which screening criteria have been applied and whether screening criteria have been applied appropriately. ECCC notes that in addition to those screening parameters listed above, the Proponent should also reference the Federal Environmental Quality Guidelines (FEQG), which include recently developed guidelines reflecting the current state of science. FEQGs are developed where there is a federal need for a guideline but where the CCME guidelines for the substance have not yet been developed or are not reasonably expected to be updated in the future. In cases where both CCME and FEQG exist, the FEQG should be applied. The Proponent may also incorporate other jurisdictions (e.g. BC MOE) for parameters where there is no CCME, FEQG, or Manitoba guideline. In addition, Table 3 provided a summary of input concentrations for parameters of concern, some of which were highlighted in pink shading. While it is assumed that the highlighted values may represent exceedances of the screening criteria, this was not explicitly stated in a table legend. **Rationale:** A clear outline of which water quality screening criteria was used to evaluate each water quality parameter is needed to assess water quality of the Hughes River, aerated pit water, and model results.
Information Request:	a) Provide a complete consolidated list of water quality screening criteria. The list should include the specific numeric value used to screen each parameter, and the source of the screening criteria. Where multiple guidelines are available for one parameter, justification should be provided for the selected screening criteria. The response should include any toxicity modifying factors used in calculation of the screening criteria. b) Define what the pink-shaded cells indicate in Table 3.
Response:	a) As described in "*Lynn Lake Gold Project: Assessment Modelling for Dewatering Wendy Pit and East Pit to Hughes River*" (the Report), baseline and modelled Hughes River water quality were screened against the Canadian Water Quality Guidelines for the Protection of Aquatic Life – Freshwater (CWQG-FAL), the

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	Manitoba Water Quality Standards, Objectives and Guidelines (MWQSOG), and the Schedule 4 Metal and Diamond Mining Effluent Regulations (MDMER) effluent limits. As requested by the reviewer(s), baseline water quality and model predicted water quality in the Hughes River are now also screened using Federal Environmental Quality Guidelines (FEQG) developed by Environment and Climate Change Canada (ECCC) and British Columbia Water Quality Guidelines for the Protection of Freshwater Aquatic Life (BC WQG-FAL) for parameters which did not have a corresponding CWQG, MWQSOG, or FEQG. Attachment NOC-02-01 includes a summary of the water quality guidelines used to screen baseline water quality in Hughes River and East Pit and predicted water quality in Hughes River during pit dewatering (Table NOC-02-01-1), including FEQGs and BC WQG-FALs. The equations used to calculate guidelines that are dependent on site-specific water chemistry (e.g., water hardness, pH, and/or dissolved organic carbon [DOC], etc.) are listed in Table NOC-02-01-2. Guidelines dependent on site-specific water chemistry were calculated monthly for each site, except for FEQGs that do not have a published equation to manually calculate the guideline value (e.g., dissolved copper and total iron). For screening purposes, the FEQGs for dissolved copper (which are calculated using ECCC's biotic ligand model) and FEQGs for total iron (which are calculated using ECCC's look-up table and/or online calculator) were conservatively calculated using minimum values for DOC, pH, and water hardness on a site-by-site basis. The calculated guidelines (i.e., from baseline data for each month and site) were used to screen model predictions for guideline exceedances in Hughes River. Guidelines dependent on site-specific water chemistry were calculated for each site and month and are provided in Attachment NOC-02-01 (Tables NOC-02-01-3 to NOC-02-01-7). The criteria for identifying parameters of potential concern (POPCs) in baseline (model inputs) water quality in the Hughes River and East Pit and modelled water quality in the Hughes River following discharge of pit water to the Hughes River were as follows: • **Baseline (model inputs):** 'POPCs were identified as concentrations above a CWQG, MWQSOG, FEQG, and/or BC WQG-FAL' (note: select BC WQG-FAL were used for parameters without corresponding CWQG, MWQSOG, or FEQG). • **Modelled water quality in the Hughes River:** a POPC was a parameter with a monthly predicted concentration that was: (1) above a CWQG, MWQSOG, FEQG, and/or BC WQG-FAL; and (2) above the corresponding monthly baseline concentration, regardless of frequency or magnitude. Only months during the open water season (May to October) were considered for the identification of POPCs, as this is the period within which pit dewatering will occur. POPCs identified in baseline water quality data in the Hughes River at sites AQF40, AQF41, AQF42, AQF43, AQF44, and AQF45, and in East Pit (AQF6) are summarized in Attachment NOC-02-01 (Tables NOC-02-01-8 to NOC-02-01-14). POPCs in the model predicted Hughes River following pit water discharge, by site and month, are summarized in Tables NOC-02-01-15 to NOC-02-01-23. Consistent with the original modelling report, dissolved copper and total iron are the POPCs predicted to occur in the Hughes River with pit dewatering during the open

<table>
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water season; no new POPCs were identified when model predicted water quality in the Hughes River was compared to the FEQGs and BC WQG-FALs. However, the frequency of predicted exceedances for copper increased due to the relatively low FEQG values for dissolved copper; the BLM values ranged from the lowest possible value of 0.0002 mg/L to 0.0074 mg/L, whereas the calculated long-term MWQSOG for dissolved copper ranged from 0.00063 mg/L to 0.015 mg/L and the calculated long-term CWQG for total copper was 0.002 mg/L to 0.004 mg/L. The FEQG for total iron (ranging from 0.33 mg/L to 0.66 mg/L) was consistently greater than the corresponding CWQG and MQWSOG (each 0.3 mg/L). Therefore, the predicted frequency of guideline exceedances did not change for the predicted total iron concentrations in the Hughes River.

b) In Table 3 of the report, the pink-shaded cells indicate model inputs (i.e., baseline data) above a CWQG or MWQSOG. Table 3 did not explicitly indicate which guidelines were in exceedance nor the guideline values used to identify the exceedances. To improve clarity, Tables NOC-02-01-8 to NOC-02-01-14 list: 1) each site and month where a model input concentration was greater than the corresponding water quality guideline; 2) the specific guideline value(s) associated with each exceedance; and 3) the magnitude of each exceedance (i.e., the predicted value divided by the guideline).

Attachment NOC-02-01 includes the following summary tables:
<table>
<tr><th>Table Number</th><th>Table Description</th></tr>
<tr><td>NOC-02-01-1</td><td>Water quality guidelines summary/overview</td></tr>
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<tr><td>NOC-02-01-23</td><td>Model POPCs - Mixing Zone, 25% of 90th Percentile Hughes River Flows</td></tr>
</table>
</td></tr>
<tr><td>Attachment:</td><td>Appendix A, Attachment NOC-02-01</td></tr>
</table>

RESPONSE TO NOC-02-02

ID:	**NOC-02-02**
Expert Department or Group:	Environment and Climate Change Canada
Context and Rationale:	**Context:** The Hughes River baseline concentrations are summarized in Table 3. However, it is unclear if data quality screening was performed on the dataset. It is standard practice to screen data to identify outliers, anomalous datapoints, and identify potential issues with detection limits. In Section 3.3 the Proponent has noted a data quality issue related to copper, acknowledging that for most datapoints the dissolved copper concentration was higher than the total copper concentration. Most total copper concentrations were below the method detection limit (MDL) of < 0.00025 mg/L, with dissolved concentrations being an order of magnitude higher. This demonstrates a data error given that total copper concentration is the sum of the dissolved copper concentration plus the suspended copper concentration. This inconsistency in the copper data introduces uncertainty into the overall analysis, as dissolved copper is identified as a parameter of potential concern. Based on the data provided in Table 3, there are instances of inconsistent application of detection limits (DL). For example, when considering total phosphorus several data points are listed as below DL but include < 0.05 mg/L, < 0.03 mg/L, and < 0.02 mg/L. However, measured concentrations are as low as 0.01 mg/L. ECCC notes that as per the CCME guidance on phosphorus, 0.05 mg/L indicates a eutrophic status, while 0.01 mg/L indicates an oligotrophic mesotrophic tropic status, which is a considerable difference. The elevated and variable detection limits introduce uncertainty in establishing the trophic status of the Hughes River, and subsequently assessing potential impacts related to phosphorus in the pit water discharge. Additionally, the Hughes River baseline water quality data is only based on one year of monitoring data. Multiple years of baseline data are preferred to provide increased certainty that baseline concentrations accurately represent the potential range of conditions. The Proponent stated that, “additional samples of the Hughes River water quality at station AQF40 should be collected and analyzed prior to discharge water pit water” and ECCC is supportive of this approach. **Rationale:** Assessment of data quality is critical prior to inputting into the model to ensure the validity of model outputs. Multiple issues with baseline water characterization data have been identified, which need to be addressed for potential impacts of pit water discharge to the Hughes River to be assessed. Additional baseline sampling for water quality prior to pit water discharge would refine water quality modelling, in light of the concerns identified above and provide increased certainty on the potential impacts.
Information Request:	a) Provide a description of the data quality screening methods for the Hughes River baseline water quality dataset. Include the identification of outliers, anomalous datapoints, and details on detection limits. b) Provide additional information to support that the copper concentrations used in the model are accurate, given that total copper concentrations were often higher than

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	dissolved copper. Discuss the implications that discrepancies between total and dissolved copper concentrations may have on overall model outputs and conclusions of impacts. c) Provide an explanation for instances where detection limits for water quality parameters are variable, particularly total phosphorus. Discuss the implications that the variable detection limits in the baseline water quality dataset may have on model outputs and conclusions related to impacts. Environment and Climate Change Canada also recommends undertaking additional baseline water quality monitoring prior to discharge. Additional data is needed to improve statistical confidence in baseline data to refine and improve subsequent water quality modelling.
Response:	a) Methods and results of the quality assurance and quality control (QA/QC) review for the 2022/2023 surface water quality monitoring program are provided in Attachment NOC-02-02-A. Attachment NO2-02-02-A is the QA/QC review for the entire 2022/2023 baseline program (which included monitoring water quality in other watercourses and lakes around the Gordon and MacLellan sites). The QA/QC review was intended to be appended to the original model report in Appendix C (Alamos Gold 2023) but was left out in error. Based on results of the QA/QC review, the quality of samples collected in the 2022/2023 monitoring program were generally acceptable. Field and travel blanks showed some parameters above detection limits (DL). However, over 95% of the field/travel blanks analysed were below the DL. Duplicate samples generally met the data quality objective (i.e., relative percent differences [RPD] less than 20%) for each parameter, indicating good sample and analytical precision. Additionally, the recommended sample holding times were consistently achieved for each parameter, except for nitrite and nitrate; meeting the 3-day hold time for these parameters was not feasible due to the remote location of the study area. While a hold time exceedance increases the uncertainty of the nitrite and nitrate results, it does not indicate that results are compromised (ALS 2017; Attachment NOC-02-02-B). Analytical results were screened for elevated DLs. In some samples, DLs were increased because the analytical laboratory (ALS Environmental) diluted the sample to account for sample matrix effects. This occasionally resulted in multiple DLs (usually two, or sometimes, three different DLs) across the monitoring period for the same parameter. For individual results that were below the DL, a value of half the corresponding DL was assigned as a surrogate concentration. No outliers were removed from the baseline dataset. b) Concentrations of some dissolved metals (e.g., beryllium, copper, lead, molybdenum, selenium, and zinc) were above the corresponding total concentrations on multiple occasions (see Appendix A of the modelling report). The cause(s) of the noted discrepancies for total vs. dissolved concentrations are unknown. However, ALS Environmental has noted that occurrences of dissolved concentrations greater than total concentrations is a common issue within surface water quality monitoring and can be caused by analytical variability in the laboratory and/or sample collection in the field (B. Mack, ALS Environmental, personal communication, February 8, 2024, and May 14, 2024).

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	Sample measurements have a degree of analytical uncertainty which can result in reported dissolved concentrations being greater than total concentrations, particularly when the true dissolved fraction is close to, or the same as, the total fraction. This analytical uncertainty is largely due to the finite precision and accuracy of laboratory instrumentation that are beyond the control of laboratory and field personnel. An additional source of uncertainty is the potential for contamination of the sample in the field. However, there are several standard sample collection and laboratory QA/QC protocols that, when adhered to, generally provide a high degree of confidence that the sample results have an acceptable degree of accuracy and precision, and that measured concentrations are generally representative of the true water chemistry under investigation. These protocols include: • *"Ensure the dissolved and total samples are taken from the same "grab" of the source sample.* • *Ensure new syringes and filters are used for each sample.* • *Ensure filters, syringes, and sample bottles aren't exposed to any airborne particulates or anything else that may impact metals concentrations in the water.* • *Ensure samples are taken, filtered, and submitted to the lab for preservation within 14 days".* All the above practices were adhered to during sample collection, and these practices align with the Protocols Manual for Water Quality Sampling in Canada (CCME 2011). Despite following these protocols, dissolved copper and dissolved lead concentrations were frequently above the corresponding total concentrations in East Pit and Hughes River baseline data. For copper and lead, most total concentrations were below the DL (<0.00025 mg/L for total copper; <0.000025 mg/L for total lead), while in many cases the dissolved concentrations were greater than the DL (see Appendix A of modelling report). These uncertainties in the baseline data created uncertainty in the model predictions. However, the observed discrepancies between total and dissolved concentrations in the baseline data are not anticipated to influence the predicted magnitude of changes to Hughes River water quality during dewatering activities. This is because Hughes River flows will be two orders of magnitude greater than dewatering flows and, therefore, mixed water quality in the receiving environment will be dominated by baseline water quality in Hughes River. Due to these uncertainties, additional QA/QC measures have been incorporated into Alamos' 2024 monitoring program. Further details about the additional QA/QC protocols and preliminary results for the 2024 program are provided in Attachment NOC-02-02-C. In summary, the additional QA/QC protocols used in the 2024 program are: • Starting in March 2024, Alamos added a 'filtration control' to the monitoring program (which includes the collection of monthly grab samples at Hughes River sites AQF40 and AQF41 from June to December 2024). The filtration control field blank is not filtered in the same manner as the primary field blank samples (i.e., no filtration for the dissolved analytes) so that potential

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	contamination related to the field-filtration process (which may contribute to spurious results for dissolved metals) can be checked. • Split sampling (i.e., water samples sent to multiple laboratories) to check the repeatability of the analytical results and, if applicable, to identify potential causes for dissolved concentrations being greater than total concentrations. • Following the 2024 program, sample results will undergo a comprehensive QA/QC evaluation and will be compared with historical East Pit and Hughes River data. Part of this data review will include recommendations pertaining to the potential update of the mixing model to account for the noted uncertainties concerning dissolved versus total concentrations. To further reduce uncertainty, Alamos has designed a monitoring program for sampling pit water before it is discharged and for the Hughes River upstream and downstream of the proposed discharge location that will be implemented before and during pit dewatering (Attachment NOC-02-02-D). c) Detection limits (DLs) are commonly raised as part of routine laboratory analyses of water quality samples. DLs are raised if the sample is diluted by the laboratory to account for sample matrix effects, or when the laboratory method blank analysis shows comparable levels of the analyte. For baseline samples, DLs were occasionally raised which resulted in some parameters (e.g., phosphorus, beryllium, zirconium, nitrate, nitrite, etc.) with multiple DLs across the monitoring period (see Appendix A of modelling report). For baseline data processing, no adjustments were made to the DLs (other than assigning non-detects a value of half the DL), nor were data removed from the dataset because of multiple DLs. In the case of total phosphorus, the DLs depended on the type of analysis performed. Phosphorus is typically analyzed by colourimetric analysis and by inductively coupled plasma mass spectrometry (ICP-MS). Compared to ICP-MS, the colourimetric analysis for phosphorus is usually more sensitive and has a lower DL. In the baseline dataset, colorimetric analyses had DLs of <0.001 mg/L and <0.003 mg/L, whereas ICP-MS analyses had DLs of 0.03 mg/L and 0.05 mg/L. Phosphorus is a unique analyte because it is commonly reported as a 'metal' (using ICP-MS) and as a nutrient (using colourimetric analysis) in the same analytical report. Consequently, the ALS laboratory reports for the baseline dataset had two separately reported concentrations for total phosphorus, each with different DLs. When the baseline data were processed for model inputs, phosphorus 'nutrient' and phosphorus 'metal' concentrations were included in the model dataset as a single parameter. Therefore, monthly means for total phosphorus were influenced by inconsistent DLs when results were non-detects. To help address this issue, the model was re-run for total phosphorus using only the analytical results obtained from colorimetric analyses (i.e., for total phosphorus as a nutrient). The updated model inputs are presented in Attachment NOC-02-02-E, Table NOC-02-02-E1 In addition to the updated total phosphorus values, updated model results also accounted for corrections to the model as noted in the response to NOC-02-09. In the original model inputs, phosphorus analyzed as a 'metal' using ICP-MS was below the detection limit of 0.03 mg/L in most cases, which resulted in a surrogate concentration of 0.015 mg/L when halved. Consequently, the surrogate values of 0.015 mg/L for phosphorus as a 'metal' agreed with the measured values for

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	phosphorus as a nutrient (which ranged from approximately 0.01 to 0.02 mg/L). For this reason, baseline values for phosphorus did not change when only phosphorus as a nutrient was used to represent concentrations in Hughes River. The model inputs for East Pit were not updated because the original values were based on phosphorus as a nutrient. The updated phosphorus concentrations do not change the original mesotrophic classification of Hughes River (Attachment NOC-02-02-E, Table NOC-02-02-E1). Similarly in the updated model results, the vast majority of predictions for each model scenario, site, and month indicated no difference in trophic status compared to the original model predictions (the rare exceptions were a switch from meso-eutrophic to mesotrophic or vice-versa; Attachment NOC-02-02-E, Tables NOC-02-02-E1 to E4). Therefore, the updated model inputs for phosphorus do not materially change the model predictions in terms of potential project-related changes in phosphorus concentrations, or the corresponding trophic status of Hughes River. **Reference:** Alamos Gold 2023. Lynn Lake Gold Project: Assessment Modelling for Dewatering Wendy Pit and East Pit to Hughes River. Prepared by Stantec Consulting Ltd. for Alamos Gold Inc. Canadian Council of Ministers of the Environment (CCME). 2004. Canadian water quality guidelines for the protection of aquatic life: Phosphorus: Canadian Guidance Framework for the Management of Freshwater Systems. In: Canadian environmental quality guidelines, 2004, Canadian Council of Ministers of the Environment, Winnipeg.
Attachment:	Appendix A: Attachment NOC-02-02-A (i.e., QA/QC Evaluation from original report, includes its own Appendix A and Appendix B) Attachment NOC-02-02-B (i.e., Hold Time Information Sheet, ALS Laboratories), Attachment NOC-02-02-C (i.e., QA/QC memo for 2024 monitoring program, includes its own Attachment A and Maps 1 and 2) Attachment NOC-02-02-D (i.e., proposed pit dewatering monitoring plan) Attachment NOC-02-02-E (i.e., updated model inputs and results for total phosphorus)

RESPONSE TO NOC-02-03

ID:	**NOC-02-03**
Expert Department or Group:	Environment and Climate Change Canada
Context and Rationale:	Context: Water quality data for the Hughes River was collected at six sites and the resulting water quality data was considered as representative of baseline conditions. Sampling stations included: AQF41 (upstream of Hughes River Bridge), AQF40 (immediately downstream of Hughes River Bridge), AQF42 (downstream of AQF40), AQF43 (upstream of Ellystan Lake outlet confluence), AQF44 (downstream of the Ellystan Lake outlet confluence), and AQF45 (downstream of Elizabeth Lake/upstream of Hwy 391 crossing). Figure 1 confirms that AQF41 represents the environment upstream of the proposed discharge and AQF40 represents the environment immediately downstream of discharge. However, the remaining stations appear to vary anywhere from an estimated 1km to >10km (based on figure legend) downstream of the proposed discharge. The report does not provide a description of the location and distance of the baseline water quality sampling stations in relation to the proposed discharge, supporting rationale for selection of these would not be considered the immediate receiving environment in the Hughes River and water quality at these stations may be influenced by other sources into the river. **Rationale:** Selecting relevant monitoring stations in the Hughes River is important to establish accurate baseline conditions. Additional information is needed to better understand how monitoring stations were selected and how they contribute to an understanding of baseline water quality conditions.
Information Request:	Provide detailed descriptions of the baseline water quality monitoring stations, including: a) How monitoring stations were selected. b) Distance of selected stations from proposed pit water discharge location. c) A discussion of how downstream stations contribute to an understanding of baseline conditions in the immediate receiving environment.
Response:	a) The surface water monitoring program in Hughes River was designed to include reference, near-field, mid-field, and far-field sites in relation to the proposed pit dewatering discharge location at the Hughes River crossing (Attachment NOC-02-03, Figure NOC-02-03-1). The upstream reference location (AQF41) was included in the baseline monitoring program to characterize existing conditions in the Hughes River. Due to the turbulent, fast-flowing water at the proposed discharge point in Hughes River, the near-field location (AQF40) was selected because it was the most readily accessible location downstream from the proposed discharge point. This location is approximately 200 m downstream of the proposed discharge point and water at this location was considered representative of baseline water quality in the Hughes River downstream of the Hughes River bridge crossing; there were no sources of potential contamination between AQF41 and AQF40 and water samples taken at

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	AQG40 were immediately downstream of the turbulent, fast-flowing section that promotes mixing. During pit dewatering, water quality monitoring in Hughes River will include monitoring at AQF40 as well as at stations along transects between the discharge point and AQF40 to characterize the lateral and longitudinal mixing zone (see Attachment NOC-02-02-D). The Hughes River consists of a series of alternating lakes and narrower mainstem reaches. Therefore, the mid-field and far-field sampling locations were positioned in the sections of Hughes River between the lakes to sample 'mixed' conditions downstream of each lake. The farthest downstream sites (AQF43, AQF44, and AQF45) were included in consideration of Operations-phase effluent discharges to Farley Lake. Farley Lake drains to the Hughes River via Farley Creek, Swede Lake, and Ellystan Lake. Therefore, these three sample sites were included in the monitoring program to enable monitoring of effluent discharges to Farley Lake during mine operations and to provide far-field data for monitoring discharge of pit water to the Hughes River during construction. b) The approximate distances of each monitoring location from the proposed pit water discharge location in the Hughes River are as follows: • AQF41: 0.7 km upstream (reference site) • AQF40: 0.2 km downstream (near-field site) • AQF42: 1.1 km downstream (mid-field site) • AQF43: 6.3 km downstream (far-field site) • AQF44: 7.9 km downstream (far-field site) • AQF45: 14.4 km downstream (far-field site) c) Baseline data at AQF40 (near-field site ~200 m downstream of discharge location) includes data from May 2022 through April 2023. However, the assessment of potential changes in Hughes River water quality due to pit dewatering included data from all monitoring locations sampled in the Hughes River in 2023 and 2024. The purpose was to include a wider range of data for the Hughes River that would be more representative of current conditions; minimum and maximum concentrations from the entire Hughes River dataset were presented in the summary statistics presented in Table 6. Currently, there are no discharges to the Hughes River at any location. Therefore, water quality samples at all six sample sites represented natural, pre-mine conditions at locations between 200 m and 14.4 km downstream of the proposed discharge location with differences in water quality between sites due to natural-occurring differences in hydrology, sediment, and/or channel hydraulics (i.e., lentic or lotic habitat) along the river.
Attachment:	Appendix A, Attachment NOC-02-03

RESPONSE TO NOC-02-04

ID:	**NOC-02-04**
Expert Department or Group:	Environment and Climate Change Canada
Context and Rationale:	**Context:** Mixing scenarios were modelled for stations AQF40, AQF42, AQF43, AQF44 and AQF45; mixing was not modelled for AQF41 because it is located upstream of the proposed discharge location. The mixing calculation assumed instantaneous mixing of pit water and Hughes River water and was based on a proportional contribution based on concentrations and mass loads using the following formula: Instantaneous mixed concentration at Hughes River Stations = ([concentration in aerated pit] x [pit dewatering rate]) + (concentration at river station] x [flow of river]) / ([pit dewatering rate] + [river flow]) The modelled scenarios included variations on river flows, pit water quality concentrations, and a double pumping rate as an upper bound condition. The model did not include variation in Hughes River water quality, but all modelling scenarios were applied to Hughes River Stations AQF40, AQF42, AQF43, AQF44 and AQF45. It is interpreted that this approach resulted in the Proponent calculating individual water quality concentrations for stations downstream of the discharge, as if these stations were the direct receiving environment for the effluent (full results presented in Appendix F.1 – F.3). For example, monthly baseline concentrations at station AQF45 were input into the formula to estimate mixed water quality conditions as if this station was the discharge point of the pit water, when it is >10km downstream. It is unclear why the instantaneous mixed concentration was calculated using data from the downstream monitoring locations since these locations are not direct receivers of the pit water discharge. Additionally, in the summary of mixed water quality results and assessment of overall potential impacts on the Hughes River, the Proponent has compiled data from all downstream stations. The results of the model runs are presented in Table 6, where the Proponent has compiled model outputs for all downstream stations, during the period of May – October, and provided statistics (median, 10th percentile, 90th percentile) on the full downstream dataset. Inclusion of the far downstream stations in the summary statistics that are used to draw conclusions on the potential for effects in the Hughes River may result in inaccurate predictions of the potential for changes to the immediate receiving environment (i.e. AQF40). **Rationale:** The inclusion of far downstream monitoring stations may impact the evaluation of water quality impacts by introducing uncertainty into the model. Baseline water quality at these stations may be influenced by other inputs into the river and may not be reflective of water quality in the vicinity of the discharge. This could result in the over or underestimation of predicted concentrations.
Information Request:	a) Provide rationale for the inclusion of sites AQF42, AQF43, AQF44, and AGF45 in the Hughes River and Pit Dewatering mixed concentration modelling. b) Explain why sites AQF42, AQF43, AQF44, and AGF45 were treated as direct receivers of pit water discharge in the model.

ID:	**NOC-02-04**
	c) Provide an assessment of water quality and summary statistics for modelling results based on data from AQF40 only. Compare results of this assessment to the conclusions provided in the Assessment Model Report. d) If downstream sites are to be included in the modelling and overall assessment of impacts, then provide analysis and rationale for how these downstream sites are appropriate and comparable to immediate receiving environment conditions (i.e. AQF40).
Response:	a) Hughes River water quality data was collected monthly between May 2022 and April 2023 and samples were considered representative of existing water quality conditions in Hughes River. The model was prepared using data from all the Hughes River baseline monitoring locations downstream of the proposed discharge location (AQF40, AQF42, AQF43, AQF44, and AQF45). These sites have approximately one year of monitoring data. Data from each site was incorporated into the model to compensate for a lack of long-term data to characterize temporal variability. The rationale was that including data from all sites would capture the variability of baseline water quality in Hughes River. This was considered reasonable because the Hughes River between AQF40 and AQF45 is unaffected by anthropogenic discharges, and because any variability observed between sites likely captures the natural variability of the river better than would a single site. Overall summary statistics of modelling results using all available baseline data were presented in Table 6 and 7 of the report. However, the assessment of pit dewatering at individual monitoring locations, including at AQF40, were included in Appendix F. For this response, Parameters of Potential Concern (POPCs) were identified for each model scenario if the predicted monthly concentration exceeded a guideline (including a FEQG or BC WQG-FAL, as requested in NOC-02-01), and if the predicted concentration was > 110% of baseline concentrations between May and October. Screening of predicted total iron and dissolved copper concentrations to the FEQG required that POPCs be parameters that were above guideline(s) and greater than 110% of the baseline concentration in Hughes River. This assessment demonstrates that baseline water quality at AQF40 (and other Hughes River locations) exceeds water quality guidelines for dissolved copper and total iron (Table 1). The results of this rescreening are consistent with previous results. This is because Hughes River flows are two orders of magnitude greater than the proposed pit dewatering rate. Dewatering of Wendy and East Pits will occur between May and October when Hughes River flows are highest and, therefore, will result in mixed water concentrations lower than if the pits were dewatered in winter (i.e., November to April).

Table 1 Modelled scenarios at AQF 40 with Predicted Parameters of Potential Concern (POPC) between May and October >110% of baseline concentrations.

River flow and pit concentration scenarios	POPC: Total Iron (Fe)	POPC: Dissolved Copper (Cu)
Median Hughes monthly flow rate, median mixed pit concentrations	-	-
	Mixing Zone	Mixing Zone
	-	2xpumping
10th percentile Hughes monthly flow rate, median mixed pit concentrations	-	Base Case
	Mixing Zone	Mixing Zone
	-	2xpumping
90th percentile Hughes monthly flow rate, median mixed pit concentrations	-	-
	-	Mixing Zone
	-	-
Median Hughes monthly flow rate, 10th percentile mixed pit concentrations	-	-
	Mixing Zone	-
	-	-
10th percentile Hughes monthly flow rate, 10th percentile mixed pit concentrations	-	-
	Mixing Zone	-
	-	-
90th percentile Hughes monthly flow rate, 10th percentile mixed pit concentrations	-	-
	-	-
	-	-
Median Hughes monthly flow rate, 90th percentile mixed pit concentrations	-	Base Case
	Mixing Zone	Mixing Zone
	-	2xpumping
10th percentile Hughes monthly flow rate, 90th percentile mixed pit concentrations	-	Base Case
	Mixing Zone	Mixing Zone
	-	2xpumping
90th percentile Hughes monthly flow rate, 90th percentile mixed pit concentrations	-	-
	-	Mixing Zone
	-	2xpumping

Note: 2xpumping = double the estimate pumping rate to 0.78 m^3/s; Mixing zone = 25% of the Hughes River flows; base case = a pumping rate of 0.39 m^3/s.

b) Sites AQF42, AQF43, AQF44, and AGF45 were treated as direct receivers of pit water discharge in the model to provide a conservative assessment of the potential impacts of direct discharge to the Hughes River at all locations downstream of the proposed discharge location. Results at AQF40 were consistent with results of the original assessment using data from all locations presented in Table 7 of the model report (summary of all monitoring sites). Model results have been updated to

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	correct for model errors discussed in NOC-02-09 and have been screened to include additional guideline comparisons; updated results are presented in NOC-02-04 a. c) Model results at AQF40 were provided in Appendix F. Updated results now include additional guideline comparisons as required to address NOC-02-01 and to correct model errors discussed in NOC-02-09. The updated results for the base case are consistent with the previous assessment because Hughes River flows are two orders of magnitude greater than the proposed pit dewatering rate between May and October when pit dewatering would occur; Hughes River flows are highest between May and October and, therefore, mixed concentrations would be lowest during this period. d) Because results of the modelling with only AQF40 are provided and consistent with the results of the base case original assessment using all downstream locations, a response to this comment is not necessary. The assessment was completed at AQF40. Please see responses a, b, and c.
Attachment:	None

RESPONSE TO NOC-02-05

ID:	**NOC-02-05**
Expert Department or Group:	Environment and Climate Change Canada
Context and Rationale:	**Context:** Section 4.1 described the mixing model and includes the following formula for calculation of water quality in the Hughes River: Instantaneous mixed concentration at Hughes River Stations = ([concentration in aerated pit] x [pit dewatering rate]) + (concentration at river station] x [flow of river]) / ([pit dewatering rate] + [river flow]) Section 4.1 goes on to describe modelled conditions and states that modelled conditions include “25% of Hughes River monthly flows as a mixing zone”. The Proponent has applied this mixing zone scenario by using 25% of the predicted flows in the model. Given the predicted river flows, mixing would be expected to occur rapidly. However, no estimation has been made of the true extent of the mixing zone within the Hughes River. The Proponent should identify at what distance downstream of the discharge would the pit water be expected to be fully mixed with Hughes River water. **Rationale:** An accurate estimation of the length of the mixing zone in the Hughes River is needed to assess potential water quality impacts prior to complete mixing. Quantification of the mixing zone should be based on a scientific approach.
Information Request:	Quantify the distance from the discharge point in the Hughes River where pit water will be fully mixed with river water. Include the supporting analysis.
Response:	Since the submission of the NOA/NOC, Alamos has added a diffuser to the design of the effluent pipe at the Hughes River. This diffuser is expected to supplement the natural mixing of pit water with the Hughes River water created by the fast-flowing, turbulent conditions immediately under and downstream of the discharge location. The section of the Hughes River chosen for the discharge location is upstream of the Gordon Mine Access Road bridge crossing that, when constructed, resulted in a constriction of the Hughes River (Figure 1). The diffuser pipe will be suspended above the water surface and will have multiple discharge ports to increase cross-sectional mixing. The diffuser would discharge by gravity across the full width of the channel under the bridge. Final designs of the diffuser will be provided prior to start of pit dewatering.

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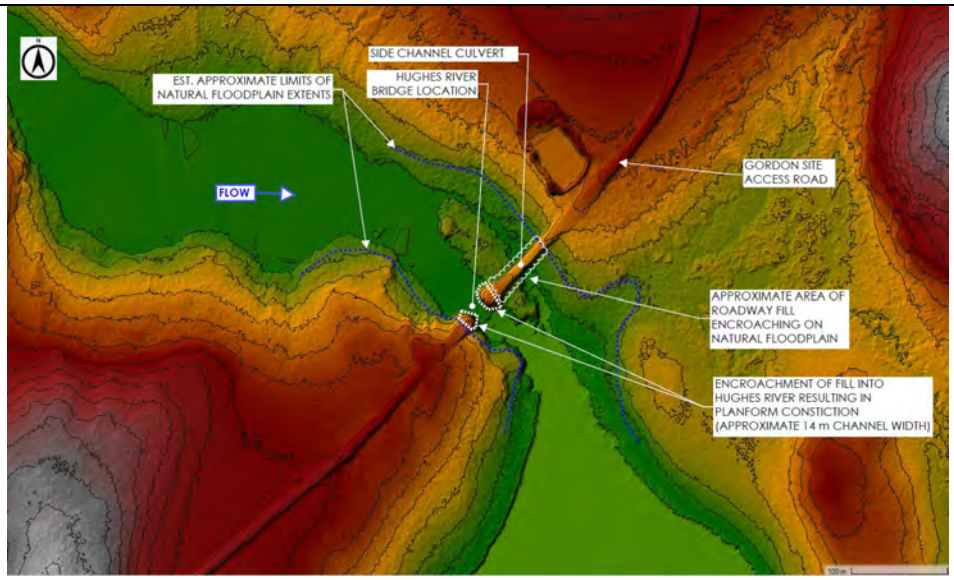


Figure 1. Overview of LiDAR data of the Hughes River near the Gordon Mine Access Road Bridge Crossing. Contours shown are at 1m intervals.

A two-dimensional (2D), depth-averaged hydraulic model was developed for the fish habitat offsetting program to simulate hydraulic conditions in the Hughes River under and downstream of the bridge. The 2D model predicted that over the range of existing flow conditions, water velocities through the hydraulic constriction under the bridge are approximately two-times the water velocities in the river upstream of the bridge. Increased water velocities through the channel constriction under the bridge, combined with the high gradient, bedrock and boulder rapid immediately downstream of the channel constriction (Figure 2), results in increased turbulence, aeration, and mixing than in other areas of the Hughes River.

Factors that will contribute to achieving such rapid mixing of pit water with the Hughes River are: 1) distribution of effluent across the section of the river under the bridge using a multi-port diffuser; 2) high water velocities in the upper layer of the Hughes River flow (e.g., 7 m/s) into which the diffuser will discharge pit water (i.e., the diffuser will be ~2.5 m above the water surface); 3) turbulent flow conditions immediately downstream from the bridge.

Turbulence conditions in the Hughes River upstream of the bridge were evaluated by calculating the Reynolds number based on a water depth of 1 m, a flow speed of 0.5 m/s, and a kinematic viscosity at 10º C of 1.31e-6. The calculated Reynolds number was ~ 380,000 which is orders of magnitude higher than the Reynolds number above which turbulent flow conditions are expected to exist (2,000; Bridge 2003[1]); turbulent flow is characterized by high velocities and rapid changes in speed and direction of flow, resulting in significant mixing of the water. The channel width under the bridge is <50% of the width of the upstream channel. Therefore, the constricted channel under the bridge contributes to higher water velocities and a more uniform distribution of these velocities compared to the upstream of the bridge where backwater areas and zero velocities

[1] Bridge, J.S. 2003. Rivers and floodplains: forms, processes, and sedimentary record. John Wiley & Sons.

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	sections are observed. These conditions promote turbulent flow and, therefore, are expected to promote mixing of pit water with water in the Hughes River. Based on the location of the pit water discharge upstream of the constricted channel and the presence of the bedrock/boulder rapid immediately downstream of the constriction, the "probable location of full mixing" is expected to occur approximately 25 m downstream of the discharge location (i.e., immediately downstream of the large boulders located downstream of the bridge) (Figure 2). The maximum "downstream location of fully mixing" is conservatively estimated to be 45 m downstream of the discharge location (Figure 2). These mixing distances were estimated prior to the inclusion of a diffuser in the design. Therefore, Alamos has more confidence that full mixing will occur by the upstream location (i.e. 25 m downstream of the outfall).  Figure 2. Orthophoto of the discharge location highlighting the diffuser location, the location of "probable full mixing" and the location of maximum "downstream full mixing".
Attachment:	None

RESPONSE TO NOC-02-06

ID:	**NOC-02-06**
Expert Department or Group:	Environment and Climate Change Canada
Context and Rationale:	**Context:** Results of the mixing model are discussed in Section 5.3 and a summary is presented in Table 6. However, the Proponent has not included a graphical representation of the predicted changes to Hughes River water quality based on the model results. **Rationale:** A graphical presentation of mixing model data would aid reviewers with evaluating the degree of change that is expected due to pit water discharge. The figure should compare key model results with screening criteria, and baseline river data to allow for a clear evaluation of how the discharge will impact river water quality. Presenting data in a figure would demonstrate the contribution of pit water discharge to potential exceedances and visually demonstrate where exceedances are naturally occurring in the Hughes River.
Information Request:	Provide a figure to illustrate the mixing model data discussed in Section 5.3 and presented in Table 6. The figure should provide a comparison to screening criteria and baseline river data.
Response:	Graphs showing the predicted mean monthly concentrations of dissolved copper and total iron, the two POPCs predicted to occur in the Hughes River at AQF40 with pit dewatering are provided in Figure 1 and Figure 2, respectively. Model results for median Hughes River flows and median pit water quality concentrations for the base case, two times the pumping rate, and 25% mixing zone scenarios are shown in both graphs compared to MWQSOGs, FEQGs, and baseline Hughes River water quality data (i.e., AQF40 Total and AQF40 Dissolved). Figure 1 shows that dissolved copper concentrations are predicted to be below the MWQSOG and at the FEQG between May and August, inclusive, for all scenarios. Dissolved copper concentrations are predicted to be above the MWQSOG and the FEQG from September to March for all scenarios. Figure 2 shows that total iron concentrations are predicted to be below the FEQG in all months and below the MWQSOG between July and September, inclusive, for all scenarios. Total iron concentrations are predicted to be near the MWQSOG in all other months.

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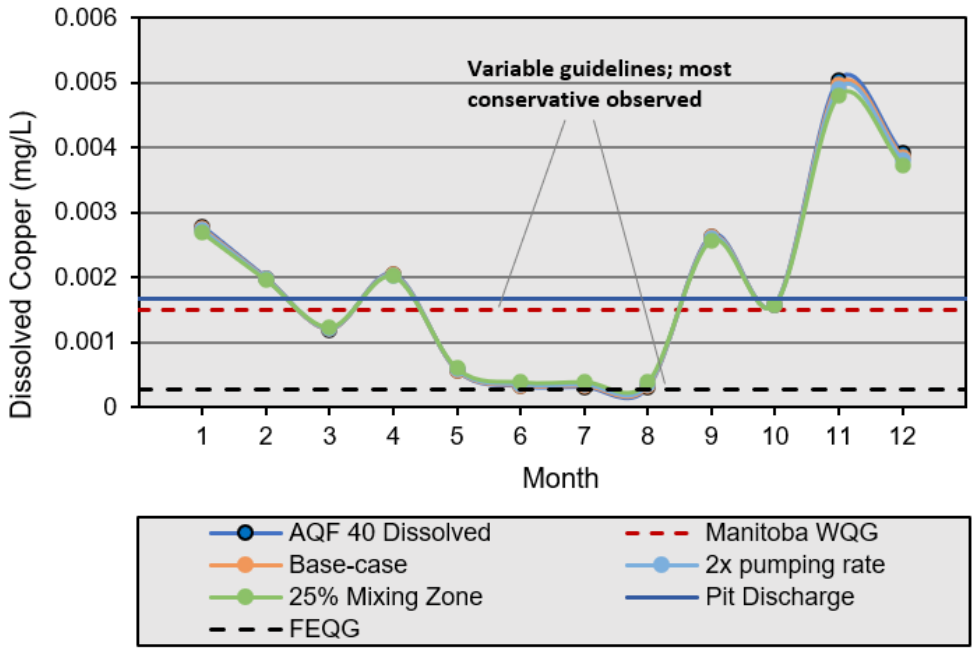


Figure 1: Predicted Average Monthly Dissolved Copper Concentrations in the Hughes River for the base case, double pumping rate, and 25% mixing zone scenarios.

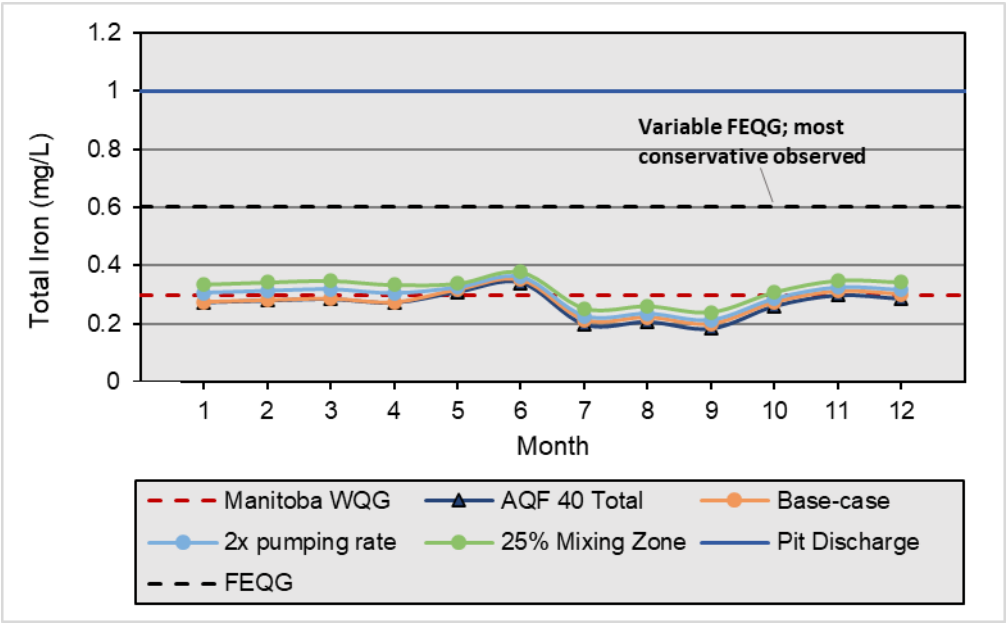


Figure 2: Predicted Average Monthly Total Iron Concentrations in the Hughes River for the base case, double pumping rate, and 25% mixing zone scenarios.

ID:	**NOC-02-06**
Attachment:	None

RESPONSE TO NOC-02-07

ID:	**NOC-02-07**
Expert Department or Group:	Environment and Climate Change Canada
Context and Rationale:	**Context:** Section 5.0 provides a summary of the water quality results from different modelled scenarios. However, the Proponent does not present discussion on model assumptions, reliability of inputs, or other sources of uncertainty. **Rationale:** Additional information related to assumptions and uncertainty is needed for ECCC to adequately evaluate water quality impacts from modelled scenarios as the validity of the model is founded model assumptions and how uncertainty is managed.
Information Request:	Discuss model assumptions, areas of uncertainty, and limitations of the model results given the overall model approach.
Response:	Like all models, the model used to predict water quality in the Hughes River during pit dewatering required assumptions and has uncertainties and limitations. Assumptions and limitations of the model were identified in the Model Report. In summary, these included: • **Geochemical Complexity:** Modelling water quality involves intricate geochemical processes (e.g., mineral precipitation or dissolution, adsorption/desorption, cation exchange). The model simplifies these, and real-world complexities may not be accurately predicted. • **Uncertainties:** Parameters related to mixing conditions, chemical release rates, and climate variations introduce uncertainty. • **Data Availability:** The accuracy of any model depends on the quality and quantity of input data. The Hughes River mixing model provided an assessment of 27 scenarios to cover a ranges of input conditions including pit dewatering rates, pit water quality, Hughes River flows and Hughes River water quality. The range of data included monthly 10th percentile, 90th percentile and median cases for each model input (see section 3.2 Table 2 and Section 3.3 Table 3, respectively, of the Model Report). This approach assumed that baseline water quality data and predicted flows covered the range of expected conditions in the Hughes River and pits over the duration of pit dewatering activities. A synthetic flow model (using regional analogs) was used for this assessment because the period of record for measured flows in the Hughes River is insufficient to calculate the various flow statistics needed to run the various model scenarios. Measured flows during dewatering will reduce the uncertainty associated the assumption that synthetic flows are representative of actual flows in the Hughes River. Water quality data from May 2023 through April 2024 was assumed to be representative of existing water quality conditions in the Hughes River. Additional monitoring data collected after April 2024 can be used to validate this assumption once the full dataset is completed, QA/QC is conducted, and data are analyzed and

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	summarized. Water quality monitoring in the pit effluent and in the Hughes River during pit dewatering will reduce the uncertainty associated with current water quality dataset. Alamos has developed a water quality monitoring plan specifically for the pit dewatering program; this program has been updated with input from Indigenous Nations and is copy is attached to these IR responses. Water quality has been measured throughout the water columns in Wendy Pit and East pit on numerous occasions. However, only water quality in East Pit was measured during an experimental mixing event conducted in August 2022. Therefore, the model assumed that mixed pit water in Wendy Pit would be the same as mixed pit water in East Pit. Alamos does not believe this assumption will alter water quality predictions in the Hughes River because: 1) the volume of water in Wendy Pit is smaller than in East Pit; 2) water quality in the two pits is similar (similar elevated concentrations below 10 m depth); 3) both pits will be aerated to mix them prior and during dewatering; and 4) the two pits are hydraulically connected and, therefore, mixed water will drain from one pit to the other during dewatering. See also NOC-02-11 for details regarding the plan to monitor water quality during dewatering.
Attachment:	See Appendix A, NOC-02-02-D for pit dewatering monitoring plan

RESPONSE TO NOC-02-08

ID:	**NOC-02-08**
Expert Department or Group:	Environment and Climate Change Canada
Context and Rationale:	**Context:** The Proponent states that, "Although several data points of the water quality input data for existing conditions from the Hughes River exceeded WQG [water quality guidelines] for total Al, dissolved Pb, and dissolved Zn (Table 3), predicted total Al, dissolved Pb, and dissolved Zn concentrations did not exceed any of WQG for any mixed modelling scenario at any location in the Hughes River downstream of the discharge location (Appendix F)." As noted by the Proponent, if the Hughes River water flow simulations are accurate, the discharge from the pits represents a relatively small contribution to the overall flows of the Hughes River (maximum 3%). Given this, and the fact that baseline conditions naturally exceed guidelines, it is unlikely that the inputs from the pit water would be sufficient to lower the existing water quality of the river to below guidelines. No additional description or interpretation has been provided to explain this result. **Rationale:** The information currently available in the report does not adequately explain how the concentrations of total Al, dissolved Pb, and dissolved Zn in the Hughes River are lowered to below guideline values due to pit water discharge. Given that these parameters exceed guideline values in some baseline data points from the Hughes River, details related to how the model results in these values reducing to below guideline values in all scenarios is relevant to assessing water quality impacts.
Information Request:	Provide additional discussion of the model results which indicate that the discharge of pit water would result in lower concentrations for total Al, dissolved Pb, and dissolved Zn in the Hughes River.
Response:	The mixing model relies on measured water quality from East Pit and the Hughes River as model inputs to predict Project-related changes in Hughes River. Variables that determine whether pit water will increase or decrease concentrations in the receiving environment include the measured concentrations in the pit and the Hughes River, the Hughes River monitoring location, the month, and the model scenario. If the concentration of a parameter is greater in the pit water compared to the corresponding concentration in Hughes River, then the mixing model appropriately predicts increased concentrations in the Hughes River due to the addition of the more concentrated pit water. The opposite occurs if the concentration of a parameter is lower in the pit water compared to the corresponding concentration in the Hughes River. This occurs despite the relatively small volume of pit water compared to the volume of the Hughes River. The volume of pit water discharge compared to Hughes River flow influences the magnitude of the predicted change in water quality but will only cause the parameter to exceed or fall below a guideline if the background concentration of that parameter is already very close to the guideline. Also, parameters whose concentrations are lowered by the more dilute concentration in the pit water (e.g., total aluminum) will, by definition, not result in a POPC because POPC are those parameters that exceed a guideline and are higher than baseline concentrations in the river.

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	In the mixing model, copper and iron were predicted to increase relative to baseline concentrations in Hughes River (and to simultaneously exceed water quality guidelines). This is because concentrations of these metals in the pit water were greater than baseline conditions in the Hughes River for some model scenarios, months, and Hughes River monitoring sites. Again, this is despite the relatively small contribution of discharge flows to the volume of Hughes River. By the same logic described above, specific model cases where concentrations of a parameter are lower in the pit compared to baseline concentrations in Hughes River resulted in predicted concentrations lower than baseline due to the addition of the less-concentrated pit water to the Hughes River. The magnitude of this change was influenced by the relative volume of pit water discharge compared to Hughes River discharge. The 10th, 50th, and 90th percentile concentrations of total aluminum and dissolved zinc in the fully mixed East Pit (AQF6) were consistently lower than baseline concentrations observed in the Hughes River at AQF40. In fact, the 90th percentile concentrations of total aluminum and dissolved zinc in East Pit were, on average, approximately six times lower and two times lower, respectively, than monthly concentrations in Hughes River. For this reason, pit discharges to Hughes River were predicted to decrease concentrations of total aluminum and dissolved zinc in the receiving environment relative to baseline conditions in Hughes River in each model scenario. For dissolved lead, concentrations in the aerated pit were mostly below the detection limit of 0.00005 mg/L, such that the 10th and 50th percentile pit concentrations (after halving the detection limit) were 0.000025 mg/L. However, due to two measured values above the detection limit, the 90th percentile concentration in the pit was approximately 0.0001 mg/L. In contrast, monthly baseline concentrations in Hughes River ranged from below the detection limit (i.e., 0.000025 mg/L when halved) to approximately 0.00015 mg/L. In model scenarios involving the 10th and 50th percentile pit concentrations, the predicted concentrations in the Hughes River were either the same as baseline concentrations in Hughes River (i.e., no predicted change), or were marginally below baseline depending on the model scenario and month. In model scenarios involving 90th percentile pit concentrations, the predicted concentration of dissolved lead was consistently greater than baseline dissolved lead concentrations in the Hughes River in all months except September (i.e., when the baseline concentration of 0.00015 mg/L was greater than the 90th percentile pit concentration of approximately 0.0001 mg/L). Monthly baseline concentrations of dissolved lead were not observed to exceed a water quality guideline in Hughes River during the open water season (i.e., May to October). The most conservative model predictions using 90th percentile pit concentrations were predicted to increase dissolved lead concentrations by up to 1.3 times baseline concentrations in Hughes River. However, these predicted concentrations are below the long-term guideline (MWQSOG) in each model scenario and month.
Attachment:	None

RESPONSE TO NOC-02-09

ID:	**NOC-02-09**
Expert Department or Group:	Environment and Climate Change Canada
Context and Rationale:	**Context:** Assuming a constant pumping rate, the worst-case scenario for water quality predictions would be in the event of low flows in the Hughes River (i.e., 10th percentile flow rate), with high pit water concentrations (i.e., 90th percentile mixed pit concentrations). This scenario is provided in the second last row of Table 6. The table indicates that model outputs are similar in all situations, with very little variability between scenarios. However, for the worst-case scenario described above, the concentrations presented in Table 6 were not the highest values for all parameters. For example, the 90th percentile concentration of iron for the downstream stations is lower (0.363 mg/L) than other scenarios that would be assumed to have better water quality. In another model run, the 90th percentile iron concentration for the median flow rate with median pit concentrations is 0.37 mg/L. While this is not a large difference in values, it is an unexpected result and has not been further explained or interpreted. **Rationale:** The scenarios for water quality predictions presented in Table 6 are important to assessing potential impacts to water quality. The presumed worst-case scenario contains unexpected results, with lower parameter values than other scenarios in some cases. Additional information is needed to adequately assess the worst-case scenario for water quality.
Information Request:	a) Provide additional discussion and interpretation of the model results, specifically that the expected worst-case does not result in the highest concentrations in the Hughes River. b) If errors exist in the results provided in Table 6, then the table should be reviewed for accuracy, and an updated Table provided. Commensurately, provide an updated discussion.
Response:	a) A calculation error was found in the model that resulted in lower concentrations for the expected worst-case. This error has been fixed and the updated model output data was rescreened against the guidelines in response to NOC-02-01 and NOC-02-04. The updated results do not contradict conclusions in the initial report; dewatering of Wendy and East Pits should occur between May and October when Hughes River flows are highest and, therefore, mixed water quality concentrations would be lowest. b) Please see response to a).
Attachment:	None

RESPONSE TO NOC-02-10

ID:	**NOC-02-10**
Expert Department or Group:	Impact Assessment Agency of Canada Marcel Colomb First Nation
Context and Rationale:	The Proponent states on p. 15: "Dissolved Cu concentrations were greater than total Cu concentrations for most data points in the Hughes River existing conditions data set; most total Cu concentrations were lower than the method detection level (MDL) of 0.00025 mg/L, and most dissolved Cu concentrations were higher than total Cu concentrations by an order of magnitude. Similarly, several dissolved Pb concentrations in the Hughes River existing conditions data set were higher than total Pb concentrations. Five data points (out of 72) from the Hughes River exceeded the Canadian and Manitoba Tier III water quality guideline of 0.1 mg/L for the protection of freshwater aquatic life for total aluminum."
Information Request:	Clarify the discrepancy between dissolved and total copper and lead concentrations which occurs in some sampling results from the East Pit Lake and Hughes River. Include a discussion of impacts on the effects assessment and conclusions.
Response:	As described in the response to IR NOC-02-02, the cause(s) of the noted discrepancies for total vs. dissolved concentrations are unknown. However, the phenomenon of measured dissolved metals concentrations being greater than corresponding total metal concentrations is common within the practice of water quality monitoring in general. Sample measurements have a degree of analytical uncertainty which can result in reported dissolved concentrations being greater than reported total concentrations, particularly when the true dissolved fraction is close to, or the same as, the total fraction, and when samples are diluted during analysis. This analytical uncertainty is due to the finite precision and accuracy of laboratory instrumentation that are beyond the control of laboratory. An additional source of uncertainty is during sample collection. However, there are standard sample collection and laboratory QA/QC protocols that, when adhered to, provide a high degree of confidence that the sample results have an acceptable degree of accuracy and precision. These protocols include: • *Ensure the dissolved and total samples are taken from the same "grab" of the source sample.* • *Ensure new syringes and filters are used for each sample.* • *Ensure filters, syringes, and sample bottles aren't exposed to any airborne particulates or anything else that may impact metals concentrations in the water.* • *Ensure samples are taken, filtered, and submitted to the lab for preservation within 14 days.* All the above practices were adhered to during sample collection, and these practices align with the Protocols Manual for Water Quality Sampling in Canada (CCME 2011). Despite following these protocols, dissolved copper and dissolved lead concentrations were frequently above the corresponding total concentrations in East Pit and Hughes River baseline data. For copper and lead, most total concentrations were below the DL (<0.00025 mg/L for total copper; <0.000025 mg/L for total lead), while in many cases the dissolved concentrations were greater than the DL (see Appendix A of modelling

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	report). These uncertainties in the baseline data created uncertainty in the model predictions. However, the observed discrepancies between total and dissolved concentrations in the baseline data are not anticipated to influence the predicted magnitude of changes to Hughes River water quality during dewatering activities. This is because Hughes River flows will be two orders of magnitude greater than dewatering flows and, therefore, mixed water quality in the receiving environment will be dominated by baseline water quality in Hughes River. Due to these uncertainties, additional QA/QC measures have been incorporated into Alamos' 2024 monitoring program. Further details about the additional QA/QC protocols and preliminary results for the 2024 program are provided in Attachment NOC-02-02-C. In summary, the additional QA/QC protocols used in the 2024 program are: • Starting in March 2024, Alamos added a 'filtration control' to the monitoring program (which includes the collection of monthly grab samples at Hughes River sites AQF40 and AQF41 from June to December 2024). The filtration control field blank is not filtered in the same manner as the primary field blank samples (i.e., no filtration for the dissolved analytes) so that potential contamination related to the field-filtration process (which may contribute to spurious results for dissolved metals) can be checked. • Split sampling (i.e., water samples sent to multiple laboratories) to check the repeatability of the analytical results and, if applicable, to identify potential causes for dissolved concentrations being greater than total concentrations. • Following the 2024 program, sample results will undergo a comprehensive QA/QC evaluation and will be compared with historical East Pit and Hughes River data. Part of this data review will include recommendations pertaining to the potential update of the mixing model to account for the noted uncertainties concerning dissolved versus total concentrations. To further reduce uncertainty, Alamos has designed a monitoring program for sampling pit water before it is discharged and for the Hughes River upstream and downstream of the proposed discharge location that will be implemented before and during pit dewatering (Attachment NOC-02-02-D).
Attachment:	See Appendix A, NOC-02-02-C for QA/QC and NOC-02-02-D for pit dewatering monitoring plan

RESPONSE TO NOC-02-11

ID:	**NOC-02-11**
Expert Department or Group:	Impact Assessment Agency of Canada
Context and Rationale:	The Proponent states on p. 11: "A commitment has been made to share the environmental monitoring program associated with his work (which is included in the Surface Water Management and Monitoring Plan and Aquatic Effects Monitoring Plan – both under development) with Marcel Colomb First Nation prior to the work proceeding."
Information Request:	Confirm that the Proponent intends to include the following in the development of their monitoring plans: a) Monitoring water in the pipeline immediately before the point of discharge at the Hughes River; b) Monitoring at a location upstream of the point of discharge; c) Monitoring at a minimum of three locations downstream; and d) All monitoring be conducted daily at the locations above, for a minimum of one week.
Response:	a) Alamos has developed a Water Quality Monitoring Program for the Gordon Pit Dewatering to the Hughes River (see attachment). The purpose of this program is to characterize water quality in the pits and in the Hughes River prior to pit dewatering and to detect any changes in water quality in the Hughes River that may result from pit dewatering. The monitoring program is summarized in a memorandum dated July 2, 2024, which is provided as Attachment NOC-02-02-D. A draft of the program was shared with Marcel Colomb First Nation (MCFN) and its advisor, Halket Environmental, on July 3, 2024. Alamos understands from discussions with Halket Environmental that the plan, in concept, addresses MCFN's concerns, pending final confirmation with MCFN. As described in the monitoring plan, Alamos intends to meet or exceed each monitoring component listed in the IR (i.e., components a, b, c, and d).
Attachment:	See Appendix A, NOC-02-02-D for pit dewatering monitoring plan

RESPONSE TO NOC-02-12

ID:	**NOC-02-12**
Expert Department or Group:	Impact Assessment Agency of Canada
Context and Rationale:	The Proponent states on p. 10: "This NOA/NOC for the Project was discussed at the first and second Environmental Advisory Committee meetings held on October 23, 2023 and January 22, 2024. The first meeting was attended by the Manitoba Métis Federation, Nisichawayasihk Cree Nation, Marcel Colomb First Nation, Mathias Colomb Cree Nation, O-Pipon-Na-Piwin Cree Nation, and Métis Nation – Saskatchewan. The second meeting was attended by the Manitoba Métis Federation, Marcel Colomb First Nation, O-Pipon-Na-Piwin Cree Nation, Peter Ballantyne Cree Nation and Métis Nation – Saskatchewan. The minutes of the Environmental Advisory Committee meetings were (and will continue to be) shared with all 13 Nations involved in the Project even if they do not attend a meeting. Accordingly, all Indigenous Nations involved with the Project have been made aware of the proposed changes. In addition, Alamos engaged with Marcel Colomb First Nation (MCFN) in 2022 about dewatering Wendy and East Pits for development of the new open pit, given their designated status as a 'Most Affected' Indigenous Nation and the proximity of the Black Sturgeon Reserve lands to the Gordon site. Engagement feedback from MCFN indicated a preference to pump pit water from Wendy and East Pits to the Hughes River." It is unclear whether other Indigenous groups shared views on the project change during the engagement with the Proponent. It is also unclear why Marcel Colomb First Nation indicated a preference to pump pit water to the Hughes River.
Information Request:	a) Describe the views of all Indigenous groups, including Marcel Colomb First Nation, that have been shared with the proponent and efforts to engage with any Indigenous groups following the two Environmental Advisory Committee meetings. b) Provide additional information on the statement that Marcel Colomb First Nation prefers the discharge location of the Hughes River, and any additional views to date.
Response:	a) Alamos has engaged with Marcel Colomb First Nation (MCFN) and other Indigenous Nations regarding the proposed Project alteration to dewater Wendy and East Pits to the Hughes River. Engagement with MCFN began in 2022, with ongoing discussions that continued through 2023 and into 2024. A summary of engagement and feedback received from the MCFN following the two Environmental Advisory Committee (EAC) meetings is provided below: • January 31, 2024: MCFN provided feedback on the proposed Project alterations, to which Alamos responded on February 2, 2024. • February 5, 2024: A follow-up meeting was held to address concerns raised by MCFN. • February 9, 2024: Alamos submitted the Notice of Alteration (NOA) and Notice of Change (NOC). On the same day, a letter from MCFN was received but was not appended to the NOA submission as it arrived post-submission. Alamos responded to this letter on February 21, 2024.

ID:	NOC-02-12
	• March 22, 2024: Alamos had calls with MCFN and their advisors to further discuss the proposed Project alterations. • April 16, 2024: MCFN cc'd Alamos on a letter sent to IAAC and the Department of Fisheries and Oceans (DFO), stating that Alamos must adhere to all MCFN recommendations. These recommendations have been incorporated into the monitoring plan. • May 22, 2024: An in-person meeting was held at the MCFN Band office, attended by Nation members, advisors, and leadership, where detailed discussions about the proposed Project alterations took place. • August 6, 2024: During the MCFN-specific Environmental Advisory Sub-Committee (EASC) meeting, Alamos noted that they had not received feedback on the Gordon pit dewatering monitoring plan sent on July 3, 2024. However, the MCFN advisor (Ian Halket) suggested that the plan, in concept, addressed the Nation's concerns, pending final confirmation. A summary of engagement and feedback received from other Indigenous Nations following the two Environmental Advisory Committee (EAC) meetings is provided below: • The proposed alteration was discussed during EAC meetings attended by representatives from the Manitoba Métis Federation, Nisichawayasihk Cree Nation, Marcel Colomb First Nation, Mathias Colomb Cree Nation, O-Pipon-Na-Piwin Cree Nation (OPCN), and Métis Nation – Saskatchewan on the following dates: October 23, 2023, January 22, 2024; April 22, 2024; and August 12, 2024. • Concerns about potential impacts on Indigenous Nations were raised by OPCN and MCFN. OPCN was concerned about discharges to the Hughes River potentially affecting South Indian Lake, while MCFN emphasized the importance of the Hughes River to their members. Alamos clarified that the Hughes River, being a larger water body, was better suited to accommodate pit water volumes and water quality than Farley Lake/Farley Creek because of its much larger water volume. Additionally, Alamos reassured OPCN that no water would be taken from Barrington Lake (which is in a different watershed from the Project), which was a concern due to a community member's trapline in the area. No other feedback was received from any engaged Nation. b) There was a diversity of opinions within the MCFN regarding the proposed Project alterations, which contradicts engagement records prior to the NOA/NOC submission. MCFN Elders voiced their support for the proposed change in discharge location because of the shorter duration, the larger receiver and the added flexibility for discharge timing. Some members and advisors expressed support for the proposed change to discharge to the Hughes River during the in-person meeting, recognizing the potential benefits and environmental safeguards. However, others voiced concerns and opposition, particularly regarding the discharge location and potential long-term impacts on Hughes River water quality. The importance of the Hughes River to the community members resulted in questions about the monitoring program. However, after sharing the detailed monitoring plan on July 3, 2024, it was understood from discussions with the MCFN advisor that the plan, in concept, addressed the Nation's concerns, pending final confirmation.

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	During the in-person meeting at the MCFN Band office on May 22, 2024, several questions and concerns were raised by MCFN. Below is a high-level summary: • Monitoring and Accountability: o Concerns about the need for clear monitoring protocols and spill contingency plans, particularly regarding spills from the discharge pipeline. o The need for flow meters in the discharge pipeline and patrols during each shift was discussed and agreed upon. o Verification of metal contamination sources through duplicate lab samples and testing at another lab was requested and agreed upon. • Feedback on Discharge Location Change: o Some members supported moving the discharge to the Hughes River to avoid previously impacted water bodies (i.e., Farley Lake/Farley Creek), while others preferred routing the discharge through a marsh to absorb contaminants. o Concerns about preserving the "virgin" bridge route were also raised. • Feedback on Water Discharge: o Concerns were raised about discharging to the Hughes River, a drinking water source, and the potential impacts on fish spawning downstream. o Alamos stated that discharge timing could avoid fish spawning windows and emphasized the modeled results and proposed monitoring plans. o Concerns were raised about the potential effect on water quality and fish from releasing sediment in the pits to the Hughes River. Alamos outlined plans to mitigate this by not fully dewatering the pits and considering additional monitoring measures. Alamos has committed to continue engaging with MCFN and the other potentially affected Indigenous Nations, to continue addressing concerns as they are raised, and to share monitoring results. Alamos has incorporated feedback received from MCFN and other Indigenous Nations into the monitoring and management plans developed for the pit dewatering program. Alamos is committed to continue engagement with all Indigenous Nations and other stakeholders throughout the Project's duration.
Attachment:	No

Appendix A ATTACHMENTS

ATTACHMENT NOC-02-01

ATTACHMENT NOC-02-01

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Table NOA-02-01-1: Water Quality Guidelines for the Protection of Freshwater Aquatic Life

Parameter1	Unit	Long-term (chronic) CWQG-FAL	Short-term (acute) CWQG-FAL	Long-term (chronic) MWQSOG-FAL	Short-term (acute) MWQSOG-FAL	Federal Environmental Quality Guidelines (FEQG)	Long-term (chronic) BC WQG-FAL*	MDMER Limits
Field Parameters								
pH	S.U.	6.5-9.0	-	6.5-9.0	-	-	-	-
Dissolved oxygen	mg/L	6.5	-	6	-	-	-	-
Nutrients, Major Anions, and Cyanide								
Ammonia (as N)	mg/L	Look up table	-	Look up table	-	-	-	0.5[a]
Nitrate	mg/L	3	124	-	-	-	-	-
Nitrite	mg/L	0.06	-	0.06	-	-	-	-
Nitrate + Nitrite	mg/L	-	-	10	-	-	-	-
Chloride	mg/L	120	640	-	-	-	-	-
Fluoride	mg/L	0.12	-	0.12	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	128	-
Phosphorus, total	mg/L	Framework	-	0.025	-	-	-	-
Cyanide (Total)	mg/L	-	-	-	-	-	-	0.5
Cyanide (Free)	mg/L	0.005	-	0.0052	0.022	-	-	-
Cyanide (WAD)	mg/L	-	-	-	-	-	0.005	-
Metals, Dissolved							-	-
Antimony	mg/L	-	-	-	-	-	-	-
Arsenic	mg/L	-	-	0.15	0.34	-	-	-
Cadmium	mg/L	-	-	Equation*	Equation*	-	-	-
Chromium (trivalent)	mg/L	-	-	Equation*	Equation*	-	-	-
Chromium (hexavalent)	mg/L	-	-	0.011	0.16	-	-	-
Copper	mg/L	-	-	Equation*	Equation*	*BLM	-	-
Lead	mg/L	-	-	Equation*	Equation*	*Equation	-	-
Manganese	mg/L	Look up table	Equation*	-	-	-	-	-
Nickel	mg/L	-	-	Equation*	Equation*	-	-	-
Strontium	mg/L	-	-	-	-	2.5	-	-
Zinc	mg/L	Equation*	Equation*	Equation*	Equation*	-	-	-
Metals, Total							-	-
Aluminum	mg/L	0.005 at pH≤6.5 0.1 at pH≥6.5	-	0.005 at pH≤6.5 0.1 at pH≥6.5	-	*Equation	-	-
Antimony	mg/L	-	-	-	-	-	0.009	-
Arsenic	mg/L	0.005	-	-	-	-	-	0.1
Barium	mg/L	-	-	-	-	-	1	-
Beryllium	mg/L	-	-	-	-	-	0.00013	-
Boron	mg/L	1.5	29	1.5	-	-	-	-
Cadmium	mg/L	Equation*	Equation*	-	-	-	-	-
Chromium (trivalent)	mg/L	0.0089	-	-	-	-	-	-
Chromium (hexavalent)	mg/L	0.001	-	-	-	0.005	-	-
Cobalt	mg/L	-	-	-	-	*Equation	-	-
Copper	mg/L	Equation*	-	-	-	-	-	0.1
Iron	mg/L	0.3	-	0.3	-	*FEQG calculator	-	-
Lead	mg/L	Equation*	-	-	-	-	-	0.08
Mercury	mg/L	0.000026	-	0.000026	-	-	-	-
Molybdenum	mg/L	0.073	-	0.073	-	-	-	-
Nickel	mg/L	Equation*	-	-	-	-	-	-
Selenium	mg/L	0.001	-	0.001	-	-	-	-
Silver	VnaVan	0.00025	-	0.0001	-	-	-	-
Strontium	mg/L	-	-	-	-	2.5	-	-
Thallium	mg/L	0.0008	-	0.0008	-	-	-	-
Uranium	mg/L	0.015	0.033	0.015	-	-	-	-
Vanadium	mg/L	-	-	-	-	0.12	-	-
Zinc	mg/L	-	-	-	-	-	-	0.4

NOTES:

[1] Dissolved oxygen and pH were not modelled and therefore not assessed for potential changes in water quality

CWQG-FAL = Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life by Canadian Council of Ministers of the Environment (CCME 2024)

MWQSOG-FAL = Manitoba Water Quality Standards Objectives and Guidelines for Freshwater Aquatic Life - Manitoba (MWS 2011).

FEQG = Federal Environmental Quality Guideline (Environment and Climate Change Canada; 2024)

BC WQG-FAL = British Columbia Water Quality Guidelines for the protection of Freshwater Aquatic Life. Only BC WQG-FAL for which CCME, MWQSOG, or FEQG were not available were used.

MDMER = Metal and Diamond Mine Effluent Regulations (2024)

A Manitoba Tier II guidelines for dissolved metals are based on exceedance once in three years, but not more frequent, being acceptable during periods of infrequent and extreme low streamflows.

* Equations were used to calculate hardness (as CaCO3), pH, DOC, and/or temperature-dependent guidelines for these parameters (see Table NO2-02-01-2).

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Table NOA-02-01-2: Equations for Variable Guidelines Dependent on Site-Specific Water Chemistry

Parameter	Long-term or short-term	Equation (for guideline values as mg/L)
CWQG		
Ammonia	long-term	pH and temperature-dependent guideline. Values used for screening are based on Table 1 in CCME (2010) and converted to ammonia (as N) by multiplying the unionized ammonia (NH3) guidelines by 0.8224.
Cadmium (Total)	long-term	At hardness >280 mg/L the guideline is 0.00037 mg/L; at hardness between 17 and 280 mg/L the guideline (in mg/L) is 0.001*[10^(1.016*(log10(Hardness))-1.71)]
Copper (Total)	long-term	At hardness >180 mg/L the guideline is 0.004 mg/L; at hardness between 82 and 180 mg/L the guideline (in mg/L) is 0.001*0.2*[exp(0.8545*(ln(Hardness))-1.465)]
Lead (total)	long-term	At hardness >180 mg/L the guideline is 0.007 mg/L; at hardness between 60 and 180 mg/L the guideline (in mg/L) is 0.001*[exp(1.273*(ln(Hardness))-4.705)]
Manganese (Dissolved)	long-term	pH and hardness-dependent guideline. Values used for screening are based on Table 5 in CCME (2019)
Nickel (Total)	long-term	At hardness >180 mg/L the guideline is 0.15 mg/L; at hardness between 60 and 180 mg/L the guideline (in mg/L) is 0.001*[exp(0.76*(ln(Hardness))+1.06))]
Zinc (Dissolved)	long-term	0.001*(exp(0.947[ln(Hardness)] - 0.815[pH] + 0.398[ln(DOC)] + 4.625))
Cadmium (Total)	short-term	0.001*10^(01.016*log10(Hardness)-1.71)
Manganese (Dissolved)	short-term	0.001*exp(0.878[ln(hardness)] + 4.76)
Zinc (Dissolved)	short-term	0.001*(exp(0.833*(ln(Hardness))+0.24*(ln(DOC))+0.526))
FEQG		
Aluminum (total)	long-term	exp([0.645 × ln(DOC)] + [2.255 × ln(hardness)] + [1.995 × pH] + [-0.284 × (ln(hardness) × pH)] -9.898)*0.001
Cobalt (total)	long-term	exp{(0.414[ln(hardness)] – 1.887}
Copper (dissolved)	long-term	Biotic Ligand Model. See ECCC (2021)
Iron (total)	long-term	Look-up table or calculator. See ECCC (2024)
Lead (dissolved)	long-term	(exp(0.514*(ln(DOC))+0.214*(ln(Hardness))+0.4354))
MWQSOG		
Ammonia	long-term and short-term	pH and temperature-dependent guideline. Values used for screening are based on Equation 1 values from Table 1 in MWS (2011)
Cadmium (Dissolved)	long-term	0.001*[(exp(0.7409*(ln(Hardness))-4.719))*(1.101672-(ln(Hardness)*0.041838))]
Chromium III (Dissolved)	long-term	0.001*[(exp(0.819*(ln(Hardness)) + 0.6848))*(0.86)]
Copper (Dissolved)	long-term	0.001*[exp(0.8545[ln(Hardness)]-1.702]*[0.960]
Lead (Dissolved)	long-term	0.001*[(exp(1.273*(ln(Hardness)) - 4.705))*((1.46203-(ln(Hardness))*0.145712))]
Nickel (Dissolved)	long-term	0.001*[(exp(0.846*(ln(Hardness))+0.0584))*(0.997)]
Zinc (Dissolved)	long-term	0.001*[(exp(0.8473*(ln(Hardness))+0.884))*(0.986)]
Cadmium (Dissolved)	short-term	0.001*((exp((1.0166*(ln(Hardness))-3.924))*(1.136672-(ln(Hardness)*0.041838))))
Chromium III (Dissolved)	short-term	0.001*((exp(0.819*(ln(Hardness))+3.7256))*(0.316))
Copper (Dissolved)	short-term	0.001*((exp(0.9422*(ln(Hardness))-1.70))*(0.96))
Lead (Dissolved)	short-term	0.001*((exp(1.273*(ln(Hardness))-1.46))*((1.46203-(ln(Hardness))*0.145712)))
Nickel (Dissolved)	short-term	0.001*((exp(0.846*(ln(Hardness))+2.255))*(0.998))
Zinc (Dissolved)	short-term	0.001*((exp(0.8473*(ln(Hardness))+0.884))*(0.978))

Notes:
CWQG = Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life by Canadian Council of Ministers of the Environment (CCME 2024)
FEQG = Federal Environmental Quality Guideline (Environment and Climate Change Canada; 2024)
MWQSOG = Manitoba Water Quality Standards Objectives and Guidelines for Freshwater Aquatic Life - Manitoba (MWS 2011).
DOC = Dissolved Organic Carbon
exp = exponential function (e^)
ln = natural logarithm

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Table NO2-02-01-3: Canadian Water Quality Guidelines (CWQG) by the Canadian Council of Ministers of the Environment (CCME) - Long-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life, by Site and Month.

Guideline Source	Site	Month	Aluminum_T	Ammonia(N)_T	Antimony_T	Arsenic_T	Boron_T	Cadmium_T	Chloride	Chromium_T	Copper_T	cyanide_free	Fluoride	Iron_T	Lead_T	Manganese_D	Mercury_T
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CCME	AQF40	1	0.005	12.5	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF40	2	0.005	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF40	3	0.005	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.31	0.000026
CCME	AQF40	4	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF40	5	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF40	6	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF40	7	0.005	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.31	0.000026
CCME	AQF40	8	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF40	9	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF40	10	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF40	11	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF40	12	0.005	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF41	1	0.005	39.4	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF41	2	0.005	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF41	3	0.005	12.5	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF41	4	0.005	12.5	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF41	5	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF41	6	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF41	7	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF41	8	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF41	9	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF41	10	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF41	11	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF41	12	0.005	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF42	1	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF42	2	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF42	3	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF42	4	0.005	12.5	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF42	5	0.005	12.5	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF42	6	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF42	7	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF42	8	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF42	9	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF42	10	0.005	12.5	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.31	0.000026
CCME	AQF42	11	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF42	12	0.005	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF43	1	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF43	2	0.005	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.31	0.000026
CCME	AQF43	3	0.005	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.31	0.000026
CCME	AQF43	4	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF43	5	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF43	6	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF43	7	0.005	12.5	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.31	0.000026
CCME	AQF43	8	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF43	9	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF43	10	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF43	11	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF43	12	0.005	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.31	0.000026
CCME	AQF44	1	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF44	2	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF44	3	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF44	4	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF44	5	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF44	6	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026

Table NO2-02-01-3: Canadian Water Quality Guidelines (CWQG) by the Canadian Council of Ministers of the Environment (CCME) - Long-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life, by Site and Month.

Guideline Source	Site	Month	Aluminum_T	Ammonia(N)_T	Antimony_T	Arsenic_T	Boron_T	Cadmium_T	Chloride	Chromium_T	Copper_T	cyanide_free	Fluoride	Iron_T	Lead_T	Manganese_D	Mercury_T
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CCME	AQF44	7	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF44	8	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF44	9	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF44	10	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF44	11	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF44	12	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF45	1	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF45	2	0.005	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF45	3	0.005	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF45	4	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF45	5	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF45	6	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF45	7	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF45	8	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF45	9	0.1	1.26	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.38	0.000026
CCME	AQF45	10	0.005	39.4	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF45	11	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.35	0.000026
CCME	AQF45	12	0.005	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.29	0.000026
CCME	AQF6_10	10	0.1	3.96	0.009	0.005	1.5	0.000266	120	0.001	0.004	0.005	0.12	0.3	0.007	0.83	0.000026
CCME	AQF6_10P	10	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF6_15	10	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF6_2.5	10	0.1	3.96	0.009	0.005	1.5	0.000183	120	0.001	0.00274	0.005	0.12	0.3	0.00397	0.64	0.000026
CCME	AQF6_25	10	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF6_5	10	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF6_60	10	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF6_90P	10	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026
CCME	AQF6_Med	10	0.1	3.96	0.009	0.005	1.5	0.00004	120	0.001	0.002	0.005	0.12	0.3	0.001	0.33	0.000026

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Table NO2-02-01-3: Canadian Water Quality Guidelines (CWQG) by the Canadian Council of Ministers of the Environment (CCME) - Long-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life, by Site and Month.

Guideline Source	Site	Month	Molybdenum_T	Nitrate(N)	Nitrite(N)	Selenium_T	Silver_T	Thallium_T	Uranium_T	Zinc_D
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CCME	AQF40	1	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0149
CCME	AQF40	2	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00589
CCME	AQF40	3	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0122
CCME	AQF40	4	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00994
CCME	AQF40	5	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00996
CCME	AQF40	6	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00701
CCME	AQF40	7	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00985
CCME	AQF40	8	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00589
CCME	AQF40	9	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00608
CCME	AQF40	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00918
CCME	AQF40	11	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00709
CCME	AQF40	12	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00589
CCME	AQF41	1	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.019
CCME	AQF41	2	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00581
CCME	AQF41	3	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0159
CCME	AQF41	4	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0105
CCME	AQF41	5	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00994
CCME	AQF41	6	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00707
CCME	AQF41	7	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.009
CCME	AQF41	8	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00581
CCME	AQF41	9	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00975
CCME	AQF41	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00833
CCME	AQF41	11	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00709
CCME	AQF41	12	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00581
CCME	AQF42	1	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00824
CCME	AQF42	2	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0136
CCME	AQF42	3	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0125
CCME	AQF42	4	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0131
CCME	AQF42	5	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0175
CCME	AQF42	6	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00522
CCME	AQF42	7	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0102
CCME	AQF42	8	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00688
CCME	AQF42	9	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00712
CCME	AQF42	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0124
CCME	AQF42	11	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00769
CCME	AQF42	12	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00522
CCME	AQF43	1	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00978
CCME	AQF43	2	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00609
CCME	AQF43	3	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0132
CCME	AQF43	4	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00938
CCME	AQF43	5	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00845
CCME	AQF43	6	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00707
CCME	AQF43	7	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0124
CCME	AQF43	8	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00609
CCME	AQF43	9	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00745
CCME	AQF43	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0113
CCME	AQF43	11	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00911
CCME	AQF43	12	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00609
CCME	AQF44	1	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00902
CCME	AQF44	2	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00663
CCME	AQF44	3	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0121
CCME	AQF44	4	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00963
CCME	AQF44	5	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0098
CCME	AQF44	6	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00719

Table NO2-02-01-3: Canadian Water Quality Guidelines (CWQG) by the Canadian Council of Ministers of the Environment (CCME) - Long-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life, by Site and Month.

Guideline Source	Site	Month	Molybdenum_T	Nitrate(N)	Nitrite(N)	Selenium_T	Silver_T	Thallium_T	Uranium_T	Zinc_D
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CCME	AQF44	7	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00789
CCME	AQF44	8	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00663
CCME	AQF44	9	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00808
CCME	AQF44	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00985
CCME	AQF44	11	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00933
CCME	AQF44	12	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00663
CCME	AQF45	1	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00946
CCME	AQF45	2	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00712
CCME	AQF45	3	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0143
CCME	AQF45	4	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00975
CCME	AQF45	5	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0129
CCME	AQF45	6	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00712
CCME	AQF45	7	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0106
CCME	AQF45	8	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00798
CCME	AQF45	9	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00856
CCME	AQF45	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0209
CCME	AQF45	11	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00958
CCME	AQF45	12	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.0131
CCME	AQF6_10	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.148
CCME	AQF6_10P	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00315
CCME	AQF6_15	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00432
CCME	AQF6_2.5	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.101
CCME	AQF6_25	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00411
CCME	AQF6_5	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00429
CCME	AQF6_60	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00315
CCME	AQF6_90P	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00315
CCME	AQF6_Med	10	0.073	3	0.06	0.001	0.00025	0.0008	0.015	0.00315

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Table NO2-02-01-4: Canadian Water Quality Guidelines (CWQG) by the Canadian Council of Ministers of the Environment (CCME) Short-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life; by Site and Month.

Guideline Source	Site	Month	Boron_T	Cadmium_T	Chloride	Manganese_D	Nitrate(N)	Uranium_T	Zinc_D
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CCME	AQF40	1	29	0.000193	640	2	124	0.033	0.0186
CCME	AQF40	2	29	0.000193	640	2	124	0.033	0.0186
CCME	AQF40	3	29	0.000254	640	2	124	0.033	0.0243
CCME	AQF40	4	29	0.000193	640	2	124	0.033	0.0192
CCME	AQF40	5	29	0.000235	640	2	124	0.033	0.022
CCME	AQF40	6	29	0.000204	640	2	124	0.033	0.0201
CCME	AQF40	7	29	0.000193	640	2	124	0.033	0.0189
CCME	AQF40	8	29	0.000197	640	2	124	0.033	0.0194
CCME	AQF40	9	29	0.000202	640	2	124	0.033	0.0198
CCME	AQF40	10	29	0.000217	640	2	124	0.033	0.0206
CCME	AQF40	11	29	0.000213	640	2	124	0.033	0.0204
CCME	AQF40	12	29	0.000193	640	2	124	0.033	0.0186
CCME	AQF41	1	29	0.00019	640	2	124	0.033	0.0184
CCME	AQF41	2	29	0.00019	640	2	124	0.033	0.0184
CCME	AQF41	3	29	0.000243	640	2	124	0.033	0.0238
CCME	AQF41	4	29	0.00019	640	2	124	0.033	0.0189
CCME	AQF41	5	29	0.000217	640	2	124	0.033	0.0206
CCME	AQF41	6	29	0.0002	640	2	124	0.033	0.0196
CCME	AQF41	7	29	0.00019	640	2	124	0.033	0.0185
CCME	AQF41	8	29	0.000192	640	2	124	0.033	0.0191
CCME	AQF41	9	29	0.000211	640	2	124	0.033	0.0213
CCME	AQF41	10	29	0.000217	640	2	124	0.033	0.0207
CCME	AQF41	11	29	0.000208	640	2	124	0.033	0.02
CCME	AQF41	12	29	0.00019	640	2	124	0.033	0.0184
CCME	AQF42	1	29	0.000189	640	2	124	0.033	0.0183
CCME	AQF42	2	29	0.000268	640	2	124	0.033	0.0249
CCME	AQF42	3	29	0.000262	640	2	124	0.033	0.0254
CCME	AQF42	4	29	0.000189	640	2	124	0.033	0.0189
CCME	AQF42	5	29	0.000217	640	2	124	0.033	0.0223
CCME	AQF42	6	29	0.000189	640	2	124	0.033	0.0189
CCME	AQF42	7	29	0.000191	640	2	124	0.033	0.0187
CCME	AQF42	8	29	0.000199	640	2	124	0.033	0.02
CCME	AQF42	9	29	0.000215	640	2	124	0.033	0.0216
CCME	AQF42	10	29	0.000219	640	2	124	0.033	0.0208
CCME	AQF42	11	29	0.000227	640	2	124	0.033	0.0216
CCME	AQF42	12	29	0.000189	640	2	124	0.033	0.0183
CCME	AQF43	1	29	0.000197	640	2	124	0.033	0.0201
CCME	AQF43	2	29	0.000197	640	2	124	0.033	0.0194
CCME	AQF43	3	29	0.000252	640	2	124	0.033	0.0237
CCME	AQF43	4	29	0.000197	640	2	124	0.033	0.0194
CCME	AQF43	5	29	0.000239	640	2	124	0.033	0.0236
CCME	AQF43	6	29	0.000215	640	2	124	0.033	0.0208
CCME	AQF43	7	29	0.000197	640	2	124	0.033	0.0196
CCME	AQF43	8	29	0.000213	640	2	124	0.033	0.0214
CCME	AQF43	9	29	0.000211	640	2	124	0.033	0.0213
CCME	AQF43	10	29	0.000219	640	2	124	0.033	0.0208
CCME	AQF43	11	29	0.000219	640	2	124	0.033	0.0212
CCME	AQF43	12	29	0.000197	640	2	124	0.033	0.0194
CCME	AQF44	1	29	0.000196	640	2	124	0.033	0.0192
CCME	AQF44	2	29	0.000196	640	2	124	0.033	0.0192
CCME	AQF44	3	29	0.000262	640	2	124	0.033	0.025
CCME	AQF44	4	29	0.000196	640	2	124	0.033	0.0194
CCME	AQF44	5	29	0.000233	640	2	124	0.033	0.0229
CCME	AQF44	6	29	0.000199	640	2	124	0.033	0.0197

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Table NO2-02-01-4: Canadian Water Quality Guidelines (CWQG) by the Canadian Council of Ministers of the Environment (CCME) Short-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life; by Site and Month.

Guideline Source	Site	Month	Boron_T	Cadmium_T	Chloride	Manganese_D	Nitrate(N)	Uranium_T	Zinc_D
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CCME	AQF44	7	29	0.000196	640	2	124	0.033	0.0192
CCME	AQF44	8	29	0.000215	640	2	124	0.033	0.0212
CCME	AQF44	9	29	0.000248	640	2	124	0.033	0.0244
CCME	AQF44	10	29	0.000235	640	2	124	0.033	0.0221
CCME	AQF44	11	29	0.000248	640	2	124	0.033	0.0237
CCME	AQF44	12	29	0.000196	640	2	124	0.033	0.0192
CCME	AQF45	1	29	0.000206	640	2	124	0.033	0.0199
CCME	AQF45	2	29	0.000206	640	2	124	0.033	0.0199
CCME	AQF45	3	29	0.000287	640	2	124	0.033	0.0268
CCME	AQF45	4	29	0.000206	640	2	124	0.033	0.0202
CCME	AQF45	5	29	0.000243	640	2	124	0.033	0.0237
CCME	AQF45	6	29	0.000206	640	2	124	0.033	0.0202
CCME	AQF45	7	29	0.000206	640	2	124	0.033	0.0202
CCME	AQF45	8	29	0.000225	640	2	124	0.033	0.0223
CCME	AQF45	9	29	0.000248	640	2	124	0.033	0.0247
CCME	AQF45	10	29	0.000243	640	2	124	0.033	0.0229
CCME	AQF45	11	29	0.000254	640	2	124	0.033	0.024
CCME	AQF45	12	29	0.00027	640	2	124	0.033	0.0245
CCME	AQF6_10	10	29	0.00396	640	11.5	124	0.033	0.212
CCME	AQF6_10P	10	29	0.00011	640	2	124	0.033	0.0078
CCME	AQF6_15	10	29	0.00011	640	2	124	0.033	0.00944
CCME	AQF6_2.5	10	29	0.0025	640	7.75	124	0.033	0.149
CCME	AQF6_25	10	29	0.00011	640	2	124	0.033	0.00917
CCME	AQF6_5	10	29	0.00011	640	2	124	0.033	0.0094
CCME	AQF6_60	10	29	0.00011	640	2	124	0.033	0.0078
CCME	AQF6_90P	10	29	0.00011	640	2	124	0.033	0.0078
CCME	AQF6_Media	10	29	0.00011	640	2	124	0.033	0.0078

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Table NO2-02-01-5: Manitoba Water Quality Standards, Objectives and Guidelines (MWQSOG) Long-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life; by Site and Month.

Guideline Source	Site	Month	Aluminum_T	Ammonia(N)_T	Arsenic_D	Boron_T	Cadmium_D	Chromium_D	Copper_D	cyanide_free	Fluoride	Iron_T	Lead_D	Mercury_T	Methylmercury_T
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MWQSOG	AQF40	1	0.005	4.68	0.15	1.5	0.0000478	0.0108	0.0012	0.0052	0.12	0.3	0.000181	0.000026	0.000004
MWQSOG	AQF40	2	0.005	3.57	0.15	1.5	0.0000478	0.0108	0.0012	0.0052	0.12	0.3	0.000181	0.000026	0.000004
MWQSOG	AQF40	3	0.005	4.52	0.15	1.5	0.0000577	0.0135	0.00151	0.0052	0.12	0.3	0.000247	0.000026	0.000004
MWQSOG	AQF40	4	0.1	4.61	0.15	1.5	0.0000478	0.0108	0.0012	0.0052	0.12	0.3	0.000181	0.000026	0.000004
MWQSOG	AQF40	5	0.1	4.42	0.15	1.5	0.0000548	0.0127	0.00142	0.0052	0.12	0.3	0.000226	0.000026	0.000004
MWQSOG	AQF40	6	0.1	3.98	0.15	1.5	0.0000498	0.0113	0.00126	0.0052	0.12	0.3	0.000193	0.000026	0.000004
MWQSOG	AQF40	7	0.005	4.42	0.15	1.5	0.0000478	0.0108	0.0012	0.0052	0.12	0.3	0.000181	0.000026	0.000004
MWQSOG	AQF40	8	0.1	3.57	0.15	1.5	0.0000485	0.011	0.00123	0.0052	0.12	0.3	0.000186	0.000026	0.000004
MWQSOG	AQF40	9	0.1	3.57	0.15	1.5	0.0000493	0.0112	0.00125	0.0052	0.12	0.3	0.00019	0.000026	0.000004
MWQSOG	AQF40	10	0.1	4.42	0.15	1.5	0.0000518	0.0119	0.00133	0.0052	0.12	0.3	0.000207	0.000026	0.000004
MWQSOG	AQF40	11	0.1	3.98	0.15	1.5	0.0000511	0.0117	0.00131	0.0052	0.12	0.3	0.000202	0.000026	0.000004
MWQSOG	AQF40	12	0.005	3.57	0.15	1.5	0.0000478	0.0108	0.0012	0.0052	0.12	0.3	0.000181	0.000026	0.000004
MWQSOG	AQF41	1	0.005	4.68	0.15	1.5	0.0000473	0.0107	0.00119	0.0052	0.12	0.3	0.000178	0.000026	0.000004
MWQSOG	AQF41	2	0.005	3.32	0.15	1.5	0.0000472	0.0107	0.00118	0.0052	0.12	0.3	0.000177	0.000026	0.000004
MWQSOG	AQF41	3	0.005	4.68	0.15	1.5	0.0000561	0.0131	0.00146	0.0052	0.12	0.3	0.000235	0.000026	0.000004
MWQSOG	AQF41	4	0.005	4.68	0.15	1.5	0.0000473	0.0107	0.00119	0.0052	0.12	0.3	0.000178	0.000026	0.000004
MWQSOG	AQF41	5	0.1	4.52	0.15	1.5	0.0000518	0.0119	0.00133	0.0052	0.12	0.3	0.000207	0.000026	0.000004
MWQSOG	AQF41	6	0.1	3.98	0.15	1.5	0.0000491	0.0112	0.00124	0.0052	0.12	0.3	0.000189	0.000026	0.000004
MWQSOG	AQF41	7	0.1	4.52	0.15	1.5	0.0000473	0.0107	0.00119	0.0052	0.12	0.3	0.000178	0.000026	0.000004
MWQSOG	AQF41	8	0.1	3.57	0.15	1.5	0.0000476	0.0108	0.0012	0.0052	0.12	0.3	0.00018	0.000026	0.000004
MWQSOG	AQF41	9	0.1	4.42	0.15	1.5	0.0000508	0.0116	0.00129	0.0052	0.12	0.3	0.0002	0.000026	0.000004
MWQSOG	AQF41	10	0.1	4.15	0.15	1.5	0.0000518	0.0119	0.00133	0.0052	0.12	0.3	0.000207	0.000026	0.000004
MWQSOG	AQF41	11	0.1	3.98	0.15	1.5	0.0000504	0.0115	0.00128	0.0052	0.12	0.3	0.000198	0.000026	0.000004
MWQSOG	AQF41	12	0.005	3.32	0.15	1.5	0.0000472	0.0107	0.00118	0.0052	0.12	0.3	0.000177	0.000026	0.000004
MWQSOG	AQF42	1	0.1	4.42	0.15	1.5	0.0000472	0.0107	0.00118	0.0052	0.12	0.3	0.000177	0.000026	0.000004
MWQSOG	AQF42	2	0.1	4.61	0.15	1.5	0.00006	0.0141	0.00159	0.0052	0.12	0.3	0.000262	0.000026	0.000004
MWQSOG	AQF42	3	0.1	4.42	0.15	1.5	0.000059	0.0139	0.00156	0.0052	0.12	0.3	0.000256	0.000026	0.000004
MWQSOG	AQF42	4	0.005	4.68	0.15	1.5	0.0000472	0.0107	0.00118	0.0052	0.12	0.3	0.000177	0.000026	0.000004
MWQSOG	AQF42	5	0.005	4.68	0.15	1.5	0.0000518	0.0119	0.00133	0.0052	0.12	0.3	0.000207	0.000026	0.000004
MWQSOG	AQF42	6	0.1	3.32	0.15	1.5	0.0000472	0.0107	0.00118	0.0052	0.12	0.3	0.000177	0.000026	0.000004
MWQSOG	AQF42	7	0.1	4.61	0.15	1.5	0.0000476	0.0108	0.0012	0.0052	0.12	0.3	0.00018	0.000026	0.000004
MWQSOG	AQF42	8	0.1	3.78	0.15	1.5	0.0000488	0.0111	0.00123	0.0052	0.12	0.3	0.000187	0.000026	0.000004
MWQSOG	AQF42	9	0.1	3.78	0.15	1.5	0.0000515	0.0118	0.00132	0.0052	0.12	0.3	0.000204	0.000026	0.000004
MWQSOG	AQF42	10	0.005	4.68	0.15	1.5	0.0000521	0.012	0.00134	0.0052	0.12	0.3	0.000209	0.000026	0.000004
MWQSOG	AQF42	11	0.1	3.98	0.15	1.5	0.0000535	0.0123	0.00138	0.0052	0.12	0.3	0.000218	0.000026	0.000004
MWQSOG	AQF42	12	0.005	3.32	0.15	1.5	0.0000472	0.0107	0.00118	0.0052	0.12	0.3	0.000177	0.000026	0.000004
MWQSOG	AQF43	1	0.1	4.52	0.15	1.5	0.0000486	0.011	0.00123	0.0052	0.12	0.3	0.000186	0.000026	0.000004
MWQSOG	AQF43	2	0.005	3.32	0.15	1.5	0.0000486	0.011	0.00123	0.0052	0.12	0.3	0.000186	0.000026	0.000004
MWQSOG	AQF43	3	0.005	4.61	0.15	1.5	0.0000574	0.0134	0.0015	0.0052	0.12	0.3	0.000244	0.000026	0.000004
MWQSOG	AQF43	4	0.1	4.52	0.15	1.5	0.0000486	0.011	0.00123	0.0052	0.12	0.3	0.000186	0.000026	0.000004
MWQSOG	AQF43	5	0.1	3.98	0.15	1.5	0.0000555	0.0129	0.00144	0.0052	0.12	0.3	0.000231	0.000026	0.000004
MWQSOG	AQF43	6	0.1	3.78	0.15	1.5	0.0000515	0.0118	0.00132	0.0052	0.12	0.3	0.000204	0.000026	0.000004
MWQSOG	AQF43	7	0.005	4.68	0.15	1.5	0.0000486	0.011	0.00123	0.0052	0.12	0.3	0.000186	0.000026	0.000004
MWQSOG	AQF43	8	0.1	3.32	0.15	1.5	0.0000511	0.0117	0.00131	0.0052	0.12	0.3	0.000202	0.000026	0.000004
MWQSOG	AQF43	9	0.1	3.78	0.15	1.5	0.0000508	0.0116	0.00129	0.0052	0.12	0.3	0.0002	0.000026	0.000004
MWQSOG	AQF43	10	0.1	4.61	0.15	1.5	0.0000521	0.012	0.00134	0.0052	0.12	0.3	0.000209	0.000026	0.000004
MWQSOG	AQF43	11	0.1	4.3	0.15	1.5	0.0000521	0.012	0.00134	0.0052	0.12	0.3	0.000209	0.000026	0.000004
MWQSOG	AQF43	12	0.005	3.32	0.15	1.5	0.0000486	0.011	0.00123	0.0052	0.12	0.3	0.000186	0.000026	0.000004
MWQSOG	AQF44	1	0.1	4.42	0.15	1.5	0.0000483	0.011	0.00122	0.0052	0.12	0.3	0.000184	0.000026	0.000004
MWQSOG	AQF44	2	0.1	3.57	0.15	1.5	0.0000483	0.011	0.00122	0.0052	0.12	0.3	0.000184	0.000026	0.000004
MWQSOG	AQF44	3	0.1	4.42	0.15	1.5	0.000059	0.0139	0.00156	0.0052	0.12	0.3	0.000256	0.000026	0.000004
MWQSOG	AQF44	4	0.1	4.52	0.15	1.5	0.0000483	0.011	0.00122	0.0052	0.12	0.3	0.000184	0.000026	0.000004
MWQSOG	AQF44	5	0.1	4.3	0.15	1.5	0.0000545	0.0126	0.00141	0.0052	0.12	0.3	0.000224	0.000026	0.000004

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Table NO2-02-01-5: Manitoba Water Quality Standards, Objectives and Guidelines (MWQSOG) Long-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life; by Site and Month.

Guideline Source	Site	Month	Aluminum_T	Ammonia(N)_T	Arsenic_D	Boron_T	Cadmium_D	Chromium_D	Copper_D	cyanide_free	Fluoride	Iron_T	Lead_D	Mercury_T	Methylmercury_T
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MWQSOG	AQF44	6	0.1	3.98	0.15	1.5	0.0000488	0.0111	0.00123	0.0052	0.12	0.3	0.000187	0.000026	0.000004
MWQSOG	AQF44	7	0.1	4.3	0.15	1.5	0.0000483	0.011	0.00122	0.0052	0.12	0.3	0.000184	0.000026	0.000004
MWQSOG	AQF44	8	0.1	3.57	0.15	1.5	0.0000515	0.0118	0.00132	0.0052	0.12	0.3	0.000204	0.000026	0.000004
MWQSOG	AQF44	9	0.1	3.57	0.15	1.5	0.0000568	0.0132	0.00148	0.0052	0.12	0.3	0.00024	0.000026	0.000004
MWQSOG	AQF44	10	0.1	4.42	0.15	1.5	0.0000548	0.0127	0.00142	0.0052	0.12	0.3	0.000226	0.000026	0.000004
MWQSOG	AQF44	11	0.1	4.15	0.15	1.5	0.0000568	0.0132	0.00148	0.0052	0.12	0.3	0.00024	0.000026	0.000004
MWQSOG	AQF44	12	0.1	3.57	0.15	1.5	0.0000483	0.011	0.00122	0.0052	0.12	0.3	0.000184	0.000026	0.000004
MWQSOG	AQF45	1	0.1	4.52	0.15	1.5	0.0000501	0.0114	0.00127	0.0052	0.12	0.3	0.000196	0.000026	0.000004
MWQSOG	AQF45	2	0.005	3.78	0.15	1.5	0.0000501	0.0114	0.00127	0.0052	0.12	0.3	0.000196	0.000026	0.000004
MWQSOG	AQF45	3	0.005	4.52	0.15	1.5	0.0000628	0.0149	0.00168	0.0052	0.12	0.3	0.000283	0.000026	0.000004
MWQSOG	AQF45	4	0.1	4.52	0.15	1.5	0.0000501	0.0114	0.00127	0.0052	0.12	0.3	0.000196	0.000026	0.000004
MWQSOG	AQF45	5	0.1	4.61	0.15	1.5	0.0000561	0.0131	0.00146	0.0052	0.12	0.3	0.000235	0.000026	0.000004
MWQSOG	AQF45	6	0.1	3.98	0.15	1.5	0.0000501	0.0114	0.00127	0.0052	0.12	0.3	0.000196	0.000026	0.000004
MWQSOG	AQF45	7	0.1	4.61	0.15	1.5	0.0000501	0.0114	0.00127	0.0052	0.12	0.3	0.000196	0.000026	0.000004
MWQSOG	AQF45	8	0.1	3.98	0.15	1.5	0.0000531	0.0122	0.00137	0.0052	0.12	0.3	0.000215	0.000026	0.000004
MWQSOG	AQF45	9	0.1	3.78	0.15	1.5	0.0000568	0.0132	0.00148	0.0052	0.12	0.3	0.00024	0.000026	0.000004
MWQSOG	AQF45	10	0.005	4.68	0.15	1.5	0.0000561	0.0131	0.00146	0.0052	0.12	0.3	0.000235	0.000026	0.000004
MWQSOG	AQF45	11	0.1	4.15	0.15	1.5	0.0000577	0.0135	0.00151	0.0052	0.12	0.3	0.000247	0.000026	0.000004
MWQSOG	AQF45	12	0.005	4.61	0.15	1.5	0.0000603	0.0142	0.0016	0.0052	0.12	0.3	0.000265	0.000026	0.000004
MWQSOG	AQF6_10	10	0.1	4.61	0.15	1.5	0.00038	0.124	0.0153	0.0052	0.12	0.3	0.00494	0.000026	0.000004
MWQSOG	AQF6_10P	10	0.1	4.61	0.15	1.5	0.0000281	0.0058	0.000628	0.0052	0.12	0.3	0.0000755	0.000026	0.000004
MWQSOG	AQF6_15	10	0.1	4.61	0.15	1.5	0.0000281	0.0058	0.000628	0.0052	0.12	0.3	0.0000755	0.000026	0.000004
MWQSOG	AQF6_2.5	10	0.1	4.61	0.15	1.5	0.000278	0.0855	0.0104	0.0052	0.12	0.3	0.00304	0.000026	0.000004
MWQSOG	AQF6_25	10	0.1	4.61	0.15	1.5	0.0000281	0.0058	0.000628	0.0052	0.12	0.3	0.0000755	0.000026	0.000004
MWQSOG	AQF6_5	10	0.1	4.61	0.15	1.5	0.0000281	0.0058	0.000628	0.0052	0.12	0.3	0.0000755	0.000026	0.000004
MWQSOG	AQF6_60	10	0.1	4.61	0.15	1.5	0.0000281	0.0058	0.000628	0.0052	0.12	0.3	0.0000755	0.000026	0.000004
MWQSOG	AQF6_90P	10	0.1	4.61	0.15	1.5	0.0000281	0.0058	0.000628	0.0052	0.12	0.3	0.0000755	0.000026	0.000004
MWQSOG	AQF6_Median	10	0.1	4.61	0.15	1.5	0.0000281	0.0058	0.000628	0.0052	0.12	0.3	0.0000755	0.000026	0.000004

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Table NO2-02-01-5: Manitoba Water Quality Standards, Objectives and Guidelines (MWQSOG) Long-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life; by Site and Month.

Guideline Source	Site	Month	Molybdenum_T	Nickel_D	Nitrite(N)	Nitrite_nitrate(N)	Phosphorus_T	Selenium_T	Silver_T	Thallium_T	Uranium_T	Zinc_D
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MWQSOG	AQF40	1	0.073	0.00712	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0161
MWQSOG	AQF40	2	0.073	0.00712	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0161
MWQSOG	AQF40	3	0.073	0.00895	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0203
MWQSOG	AQF40	4	0.073	0.00712	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0161
MWQSOG	AQF40	5	0.073	0.00841	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.019
MWQSOG	AQF40	6	0.073	0.00748	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0169
MWQSOG	AQF40	7	0.073	0.00712	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0161
MWQSOG	AQF40	8	0.073	0.00726	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0164
MWQSOG	AQF40	9	0.073	0.0074	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0167
MWQSOG	AQF40	10	0.073	0.00785	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0178
MWQSOG	AQF40	11	0.073	0.00773	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0175
MWQSOG	AQF40	12	0.073	0.00712	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0161
MWQSOG	AQF41	1	0.073	0.00704	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0159
MWQSOG	AQF41	2	0.073	0.00701	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0159
MWQSOG	AQF41	3	0.073	0.00865	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0196
MWQSOG	AQF41	4	0.073	0.00704	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0159
MWQSOG	AQF41	5	0.073	0.00785	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0178
MWQSOG	AQF41	6	0.073	0.00735	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0166
MWQSOG	AQF41	7	0.073	0.00704	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0159
MWQSOG	AQF41	8	0.073	0.00709	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.016
MWQSOG	AQF41	9	0.073	0.00766	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0174
MWQSOG	AQF41	10	0.073	0.00785	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0178
MWQSOG	AQF41	11	0.073	0.0076	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0172
MWQSOG	AQF41	12	0.073	0.00701	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0159
MWQSOG	AQF42	1	0.073	0.00701	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0159
MWQSOG	AQF42	2	0.073	0.00938	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0212
MWQSOG	AQF42	3	0.073	0.0092	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0208
MWQSOG	AQF42	4	0.073	0.00701	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0159
MWQSOG	AQF42	5	0.073	0.00785	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0178
MWQSOG	AQF42	6	0.073	0.00701	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0159
MWQSOG	AQF42	7	0.073	0.00708	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.016
MWQSOG	AQF42	8	0.073	0.0073	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0165
MWQSOG	AQF42	9	0.073	0.00779	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0176
MWQSOG	AQF42	10	0.073	0.00791	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0179
MWQSOG	AQF42	11	0.073	0.00816	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0185
MWQSOG	AQF42	12	0.073	0.00701	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0159
MWQSOG	AQF43	1	0.073	0.00726	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0164
MWQSOG	AQF43	2	0.073	0.00726	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0164
MWQSOG	AQF43	3	0.073	0.00889	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0201
MWQSOG	AQF43	4	0.073	0.00726	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0164
MWQSOG	AQF43	5	0.073	0.00853	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0193
MWQSOG	AQF43	6	0.073	0.00779	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0176
MWQSOG	AQF43	7	0.073	0.00726	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0164
MWQSOG	AQF43	8	0.073	0.00773	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0175
MWQSOG	AQF43	9	0.073	0.00766	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0174
MWQSOG	AQF43	10	0.073	0.00791	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0179
MWQSOG	AQF43	11	0.073	0.00791	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0179
MWQSOG	AQF43	12	0.073	0.00726	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0164
MWQSOG	AQF44	1	0.073	0.00722	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0163
MWQSOG	AQF44	2	0.073	0.00722	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0163
MWQSOG	AQF44	3	0.073	0.0092	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0208
MWQSOG	AQF44	4	0.073	0.00722	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0163
MWQSOG	AQF44	5	0.073	0.00834	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0189

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Table NO2-02-01-5: Manitoba Water Quality Standards, Objectives and Guidelines (MWQSOG) Long-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life; by Site and Month.

Guideline Source	Site	Month	Molybdenum_T	Nickel_D	Nitrite(N)	Nitrite_nitrate(N)	Phosphorus_T	Selenium_T	Silver_T	Thallium_T	Uranium_T	Zinc_D
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MWQSOG	AQF44	6	0.073	0.0073	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0165
MWQSOG	AQF44	7	0.073	0.00722	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0163
MWQSOG	AQF44	8	0.073	0.00779	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0176
MWQSOG	AQF44	9	0.073	0.00877	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0199
MWQSOG	AQF44	10	0.073	0.00841	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.019
MWQSOG	AQF44	11	0.073	0.00877	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0199
MWQSOG	AQF44	12	0.073	0.00722	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0163
MWQSOG	AQF45	1	0.073	0.00754	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0171
MWQSOG	AQF45	2	0.073	0.00754	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0171
MWQSOG	AQF45	3	0.073	0.00992	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0225
MWQSOG	AQF45	4	0.073	0.00754	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0171
MWQSOG	AQF45	5	0.073	0.00865	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0196
MWQSOG	AQF45	6	0.073	0.00754	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0171
MWQSOG	AQF45	7	0.073	0.00754	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0171
MWQSOG	AQF45	8	0.073	0.0081	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0183
MWQSOG	AQF45	9	0.073	0.00877	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0199
MWQSOG	AQF45	10	0.073	0.00865	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0196
MWQSOG	AQF45	11	0.073	0.00895	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0203
MWQSOG	AQF45	12	0.073	0.00944	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.0214
MWQSOG	AQF6_10	10	0.073	0.0883	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.201
MWQSOG	AQF6_10P	10	0.073	0.00374	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.00847
MWQSOG	AQF6_15	10	0.073	0.00374	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.00847
MWQSOG	AQF6_2.5	10	0.073	0.0603	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.137
MWQSOG	AQF6_25	10	0.073	0.00374	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.00847
MWQSOG	AQF6_5	10	0.073	0.00374	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.00847
MWQSOG	AQF6_60	10	0.073	0.00374	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.00847
MWQSOG	AQF6_90P	10	0.073	0.00374	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.00847
MWQSOG	AQF6_Median	10	0.073	0.00374	1.2	10	0.025	0.001	0.001	0.0008	0.015	0.00847

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Table NO2-02-01-6: Manitoba Water Quality Standards, Objectives and Guidelines (MWQSOG) Short-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life; by Site and Month.

Guideline Source	Site	Month	Ammonia(N)_T	Arsenic_D	Cadmium_D	Chromium_D	Copper_D	Cyanide_free	Lead_D	Nickel_D	Zinc_D
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MWQSOG	AQF40	1	32.6	0.34	0.000204	0.0832	0.00147	0.022	0.00465	0.0641	0.016
MWQSOG	AQF40	2	17.5	0.34	0.000204	0.0832	0.00147	0.022	0.00465	0.0641	0.016
MWQSOG	AQF40	3	29.8	0.34	0.000266	0.104	0.00189	0.022	0.00633	0.0806	0.0201
MWQSOG	AQF40	4	31.3	0.34	0.000204	0.0832	0.00147	0.022	0.00465	0.0641	0.016
MWQSOG	AQF40	5	28	0.34	0.000247	0.0976	0.00177	0.022	0.00581	0.0757	0.0189
MWQSOG	AQF40	6	21.9	0.34	0.000216	0.0871	0.00155	0.022	0.00496	0.0673	0.0168
MWQSOG	AQF40	7	28	0.34	0.000204	0.0832	0.00147	0.022	0.00465	0.0641	0.016
MWQSOG	AQF40	8	17.5	0.34	0.000208	0.0847	0.0015	0.022	0.00477	0.0653	0.0163
MWQSOG	AQF40	9	17.5	0.34	0.000213	0.0862	0.00153	0.022	0.00489	0.0666	0.0166
MWQSOG	AQF40	10	28	0.34	0.000228	0.0914	0.00164	0.022	0.0053	0.0707	0.0176
MWQSOG	AQF40	11	21.9	0.34	0.000224	0.09	0.00161	0.022	0.00519	0.0696	0.0174
MWQSOG	AQF40	12	17.5	0.34	0.000204	0.0832	0.00147	0.022	0.00465	0.0641	0.016
MWQSOG	AQF41	1	32.6	0.34	0.000201	0.0822	0.00145	0.022	0.00457	0.0633	0.0158
MWQSOG	AQF41	2	17.5	0.34	0.000201	0.0822	0.00145	0.022	0.00457	0.0633	0.0158
MWQSOG	AQF41	3	32.6	0.34	0.000255	0.1	0.00182	0.022	0.00604	0.0779	0.0194
MWQSOG	AQF41	4	32.6	0.34	0.000201	0.0822	0.00145	0.022	0.00457	0.0633	0.0158
MWQSOG	AQF41	5	29.8	0.34	0.000228	0.0914	0.00164	0.022	0.0053	0.0707	0.0176
MWQSOG	AQF41	6	21.9	0.34	0.000212	0.0857	0.00152	0.022	0.00485	0.0662	0.0165
MWQSOG	AQF41	7	29.8	0.34	0.000201	0.0822	0.00145	0.022	0.00457	0.0633	0.0158
MWQSOG	AQF41	8	17.5	0.34	0.000203	0.0827	0.00146	0.022	0.00461	0.0638	0.0159
MWQSOG	AQF41	9	28	0.34	0.000222	0.0893	0.00159	0.022	0.00513	0.069	0.0172
MWQSOG	AQF41	10	24.1	0.34	0.000228	0.0914	0.00164	0.022	0.0053	0.0707	0.0176
MWQSOG	AQF41	11	21.9	0.34	0.00022	0.0886	0.00158	0.022	0.00507	0.0684	0.0171
MWQSOG	AQF41	12	17.5	0.34	0.000201	0.0822	0.00145	0.022	0.00457	0.0633	0.0158
MWQSOG	AQF42	1	28	0.34	0.0002	0.0819	0.00144	0.022	0.00455	0.0631	0.0157
MWQSOG	AQF42	2	31.3	0.34	0.00028	0.109	0.00199	0.022	0.00673	0.0844	0.0211
MWQSOG	AQF42	3	28	0.34	0.000274	0.106	0.00195	0.022	0.00656	0.0828	0.0207
MWQSOG	AQF42	4	32.6	0.34	0.0002	0.0819	0.00144	0.022	0.00455	0.0631	0.0157
MWQSOG	AQF42	5	32.6	0.34	0.000228	0.0914	0.00164	0.022	0.0053	0.0707	0.0176
MWQSOG	AQF42	6	15.3	0.34	0.0002	0.0819	0.00144	0.022	0.00455	0.0631	0.0157
MWQSOG	AQF42	7	31.3	0.34	0.000203	0.0827	0.00146	0.022	0.00461	0.0637	0.0159
MWQSOG	AQF42	8	19.7	0.34	0.00021	0.0852	0.00151	0.022	0.0048	0.0657	0.0164
MWQSOG	AQF42	9	19.7	0.34	0.000226	0.0907	0.00162	0.022	0.00524	0.0701	0.0175
MWQSOG	AQF42	10	32.6	0.34	0.00023	0.0921	0.00165	0.022	0.00536	0.0712	0.0178
MWQSOG	AQF42	11	21.9	0.34	0.000239	0.0948	0.00171	0.022	0.00558	0.0735	0.0183
MWQSOG	AQF42	12	15.3	0.34	0.0002	0.0819	0.00144	0.022	0.00455	0.0631	0.0157
MWQSOG	AQF43	1	29.8	0.34	0.000209	0.0847	0.0015	0.022	0.00477	0.0654	0.0163
MWQSOG	AQF43	2	15.3	0.34	0.000209	0.0847	0.0015	0.022	0.00477	0.0654	0.0163
MWQSOG	AQF43	3	31.3	0.34	0.000264	0.103	0.00188	0.022	0.00627	0.0801	0.02
MWQSOG	AQF43	4	29.8	0.34	0.000209	0.0847	0.0015	0.022	0.00477	0.0654	0.0163
MWQSOG	AQF43	5	21.9	0.34	0.000251	0.099	0.00179	0.022	0.00593	0.0768	0.0192
MWQSOG	AQF43	6	19.7	0.34	0.000226	0.0907	0.00162	0.022	0.00524	0.0701	0.0175
MWQSOG	AQF43	7	32.6	0.34	0.000209	0.0847	0.0015	0.022	0.00477	0.0654	0.0163
MWQSOG	AQF43	8	15.3	0.34	0.000224	0.09	0.00161	0.022	0.00519	0.0696	0.0174
MWQSOG	AQF43	9	19.7	0.34	0.000222	0.0893	0.00159	0.022	0.00513	0.069	0.0172
MWQSOG	AQF43	10	31.3	0.34	0.00023	0.0921	0.00165	0.022	0.00536	0.0712	0.0178
MWQSOG	AQF43	11	26.2	0.34	0.00023	0.0921	0.00165	0.022	0.00536	0.0712	0.0178
MWQSOG	AQF43	12	15.3	0.34	0.000209	0.0847	0.0015	0.022	0.00477	0.0654	0.0163
MWQSOG	AQF44	1	28	0.34	0.000207	0.0842	0.00149	0.022	0.00473	0.065	0.0162
MWQSOG	AQF44	2	17.5	0.34	0.000207	0.0842	0.00149	0.022	0.00473	0.065	0.0162
MWQSOG	AQF44	3	28	0.34	0.000274	0.106	0.00195	0.022	0.00656	0.0828	0.0207
MWQSOG	AQF44	4	29.8	0.34	0.000207	0.0842	0.00149	0.022	0.00473	0.065	0.0162
MWQSOG	AQF44	5	26.2	0.34	0.000245	0.0969	0.00175	0.022	0.00575	0.0751	0.0187

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Table NO2-02-01-6: Manitoba Water Quality Standards, Objectives and Guidelines (MWQSOG) Short-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life; by Site and Month.

Guideline Source	Site	Month	Ammonia(N)_T	Arsenic_D	Cadmium_D	Chromium_D	Copper_D	Cyanide_free	Lead_D	Nickel_D	Zinc_D
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MWQSOG	AQF44	6	21.9	0.34	0.00021	0.0852	0.00151	0.022	0.0048	0.0657	0.0164
MWQSOG	AQF44	7	26.2	0.34	0.000207	0.0842	0.00149	0.022	0.00473	0.065	0.0162
MWQSOG	AQF44	8	17.5	0.34	0.000226	0.0907	0.00162	0.022	0.00524	0.0701	0.0175
MWQSOG	AQF44	9	17.5	0.34	0.000259	0.102	0.00185	0.022	0.00616	0.079	0.0197
MWQSOG	AQF44	10	28	0.34	0.000247	0.0976	0.00177	0.022	0.00581	0.0757	0.0189
MWQSOG	AQF44	11	24.1	0.34	0.000259	0.102	0.00185	0.022	0.00616	0.079	0.0197
MWQSOG	AQF44	12	17.5	0.34	0.000207	0.0842	0.00149	0.022	0.00473	0.065	0.0162
MWQSOG	AQF45	1	29.8	0.34	0.000218	0.0878	0.00156	0.022	0.00502	0.0679	0.0169
MWQSOG	AQF45	2	19.7	0.34	0.000218	0.0878	0.00156	0.022	0.00502	0.0679	0.0169
MWQSOG	AQF45	3	29.8	0.34	0.000299	0.115	0.00212	0.022	0.00726	0.0893	0.0223
MWQSOG	AQF45	4	29.8	0.34	0.000218	0.0878	0.00156	0.022	0.00502	0.0679	0.0169
MWQSOG	AQF45	5	31.3	0.34	0.000255	0.1	0.00182	0.022	0.00604	0.0779	0.0194
MWQSOG	AQF45	6	21.9	0.34	0.000218	0.0878	0.00156	0.022	0.00502	0.0679	0.0169
MWQSOG	AQF45	7	31.3	0.34	0.000218	0.0878	0.00156	0.022	0.00502	0.0679	0.0169
MWQSOG	AQF45	8	21.9	0.34	0.000237	0.0941	0.00169	0.022	0.00553	0.0729	0.0182
MWQSOG	AQF45	9	19.7	0.34	0.000259	0.102	0.00185	0.022	0.00616	0.079	0.0197
MWQSOG	AQF45	10	32.6	0.34	0.000255	0.1	0.00182	0.022	0.00604	0.0779	0.0194
MWQSOG	AQF45	11	24.1	0.34	0.000266	0.104	0.00189	0.022	0.00633	0.0806	0.0201
MWQSOG	AQF45	12	31.3	0.34	0.000282	0.109	0.00201	0.022	0.00679	0.085	0.0212
MWQSOG	AQF6_10	10	31.3	0.34	0.0037	0.951	0.0242	0.022	0.127	0.795	0.199
MWQSOG	AQF6_10P	10	31.3	0.34	0.000097	0.0446	0.000717	0.022	0.00194	0.0337	0.0084
MWQSOG	AQF6_15	10	31.3	0.34	0.000097	0.0446	0.000717	0.022	0.00194	0.0337	0.0084
MWQSOG	AQF6_2.5	10	31.3	0.34	0.00238	0.657	0.0158	0.022	0.078	0.542	0.136
MWQSOG	AQF6_25	10	31.3	0.34	0.000097	0.0446	0.000717	0.022	0.00194	0.0337	0.0084
MWQSOG	AQF6_5	10	31.3	0.34	0.000097	0.0446	0.000717	0.022	0.00194	0.0337	0.0084
MWQSOG	AQF6_60	10	31.3	0.34	0.000097	0.0446	0.000717	0.022	0.00194	0.0337	0.0084
MWQSOG	AQF6_90P	10	31.3	0.34	0.000097	0.0446	0.000717	0.022	0.00194	0.0337	0.0084
MWQSOG	AQF6_Median	10	31.3	0.34	0.000097	0.0446	0.000717	0.022	0.00194	0.0337	0.0084

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Table NO2-02-01-7: Federal Environmental Quality Guidelines (FEQG) Long-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life; by Site and Month.

Guideline Source	Site	Month	Aluminum_T	ChromiumVI_T	Cobalt_T	Copper_D	Iron_T	Lead_D	Strontium_D	Strontium_T	Vanadium_T
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FEQG (ECCC)	AQF40	1	0.117	0.005	0.000385	0.000279	0.6	7.61	2.5	2.5	0.12
FEQG (ECCC)	AQF40	2	0.117	0.005	0.000385	0.000279	0.6	7.61	2.5	2.5	0.12
FEQG (ECCC)	AQF40	3	0.233	0.005	0.000431	0.000279	0.6	8.56	2.5	2.5	0.12
FEQG (ECCC)	AQF40	4	0.273	0.005	0.000385	0.000279	0.6	8.16	2.5	2.5	0.12
FEQG (ECCC)	AQF40	5	0.326	0.005	0.000418	0.000279	0.6	7.81	2.5	2.5	0.12
FEQG (ECCC)	AQF40	6	0.534	0.005	0.000395	0.000279	0.6	8.21	2.5	2.5	0.12
FEQG (ECCC)	AQF40	7	0.226	0.005	0.000385	0.000279	0.6	7.83	2.5	2.5	0.12
FEQG (ECCC)	AQF40	8	0.647	0.005	0.000389	0.000279	0.6	8.06	2.5	2.5	0.12
FEQG (ECCC)	AQF40	9	0.644	0.005	0.000393	0.000279	0.6	8.12	2.5	2.5	0.12
FEQG (ECCC)	AQF40	10	0.321	0.005	0.000404	0.000279	0.6	7.75	2.5	2.5	0.12
FEQG (ECCC)	AQF40	11	0.504	0.005	0.000401	0.000279	0.6	7.94	2.5	2.5	0.12
FEQG (ECCC)	AQF40	12	0.117	0.005	0.000385	0.000279	0.6	7.61	2.5	2.5	0.12
FEQG (ECCC)	AQF41	1	0.0769	0.005	0.000383	0.0002	0.6	7.63	2.5	2.5	0.12
FEQG (ECCC)	AQF41	2	0.0769	0.005	0.000383	0.0002	0.6	7.63	2.5	2.5	0.12
FEQG (ECCC)	AQF41	3	0.199	0.005	0.000424	0.0002	0.6	8.32	2.5	2.5	0.12
FEQG (ECCC)	AQF41	4	0.232	0.005	0.000383	0.0002	0.6	8.01	2.5	2.5	0.12
FEQG (ECCC)	AQF41	5	0.296	0.005	0.000404	0.0002	0.6	7.91	2.5	2.5	0.12
FEQG (ECCC)	AQF41	6	0.486	0.005	0.000391	0.0002	0.6	8.04	2.5	2.5	0.12
FEQG (ECCC)	AQF41	7	0.271	0.005	0.000383	0.0002	0.6	7.68	2.5	2.5	0.12
FEQG (ECCC)	AQF41	8	0.657	0.005	0.000384	0.0002	0.6	8.14	2.5	2.5	0.12
FEQG (ECCC)	AQF41	9	0.396	0.005	0.0004	0.0002	0.6	8.91	2.5	2.5	0.12
FEQG (ECCC)	AQF41	10	0.408	0.005	0.000404	0.0002	0.6	8.02	2.5	2.5	0.12
FEQG (ECCC)	AQF41	11	0.477	0.005	0.000398	0.0002	0.6	7.84	2.5	2.5	0.12
FEQG (ECCC)	AQF41	12	0.0769	0.005	0.000383	0.0002	0.6	7.63	2.5	2.5	0.12
FEQG (ECCC)	AQF42	1	0.3	0.005	0.000382	0.000381	0.64	7.56	2.5	2.5	0.12
FEQG (ECCC)	AQF42	2	0.289	0.005	0.000441	0.000381	0.64	8.54	2.5	2.5	0.12
FEQG (ECCC)	AQF42	3	0.383	0.005	0.000437	0.000381	0.64	9.21	2.5	2.5	0.12
FEQG (ECCC)	AQF42	4	0.162	0.005	0.000382	0.000381	0.64	8.06	2.5	2.5	0.12
FEQG (ECCC)	AQF42	5	0.178	0.005	0.000404	0.000381	0.64	9.32	2.5	2.5	0.12
FEQG (ECCC)	AQF42	6	0.774	0.005	0.000382	0.000381	0.64	8.14	2.5	2.5	0.12
FEQG (ECCC)	AQF42	7	0.227	0.005	0.000384	0.000381	0.64	7.76	2.5	2.5	0.12
FEQG (ECCC)	AQF42	8	0.582	0.005	0.00039	0.000381	0.64	8.52	2.5	2.5	0.12
FEQG (ECCC)	AQF42	9	0.67	0.005	0.000403	0.000381	0.64	8.87	2.5	2.5	0.12
FEQG (ECCC)	AQF42	10	0.215	0.005	0.000406	0.000381	0.64	7.98	2.5	2.5	0.12
FEQG (ECCC)	AQF42	11	0.516	0.005	0.000412	0.000381	0.64	8.18	2.5	2.5	0.12
FEQG (ECCC)	AQF42	12	0.162	0.005	0.000382	0.000381	0.64	7.56	2.5	2.5	0.12
FEQG (ECCC)	AQF43	1	0.338	0.005	0.000389	0.000736	0.66	8.67	2.5	2.5	0.12
FEQG (ECCC)	AQF43	2	0.2	0.005	0.000389	0.000736	0.66	7.91	2.5	2.5	0.12
FEQG (ECCC)	AQF43	3	0.228	0.005	0.00043	0.000736	0.66	8.27	2.5	2.5	0.12
FEQG (ECCC)	AQF43	4	0.3	0.005	0.000389	0.000736	0.66	8.05	2.5	2.5	0.12
FEQG (ECCC)	AQF43	5	0.607	0.005	0.000421	0.000736	0.66	9.03	2.5	2.5	0.12
FEQG (ECCC)	AQF43	6	0.55	0.005	0.000403	0.000736	0.66	8.16	2.5	2.5	0.12
FEQG (ECCC)	AQF43	7	0.2	0.005	0.000389	0.000736	0.66	8.22	2.5	2.5	0.12
FEQG (ECCC)	AQF43	8	0.849	0.005	0.000401	0.000736	0.66	8.85	2.5	2.5	0.12
FEQG (ECCC)	AQF43	9	0.615	0.005	0.0004	0.000736	0.66	8.91	2.5	2.5	0.12
FEQG (ECCC)	AQF43	10	0.243	0.005	0.000406	0.000736	0.66	7.91	2.5	2.5	0.12
FEQG (ECCC)	AQF43	11	0.387	0.005	0.000406	0.000736	0.66	8.28	2.5	2.5	0.12
FEQG (ECCC)	AQF43	12	0.2	0.005	0.000389	0.000736	0.66	7.91	2.5	2.5	0.12
FEQG (ECCC)	AQF44	1	0.308	0.005	0.000388	0.000642	0.66	7.96	2.5	2.5	0.12
FEQG (ECCC)	AQF44	2	0.26	0.005	0.000388	0.000642	0.66	7.91	2.5	2.5	0.12
FEQG (ECCC)	AQF44	3	0.26	0.005	0.000437	0.000642	0.66	8.32	2.5	2.5	0.12
FEQG (ECCC)	AQF44	4	0.291	0.005	0.000388	0.000642	0.66	8.12	2.5	2.5	0.12
FEQG (ECCC)	AQF44	5	0.436	0.005	0.000417	0.000642	0.66	8.81	2.5	2.5	0.12

Table NO2-02-01-7: Federal Environmental Quality Guidelines (FEQG) Long-Term Water Quality Guidelines for the Protection of Freshwater Aquatic Life; by Site and Month.

Guideline Source	Site	Month	Aluminum_T	ChromiumVI_T	Cobalt_T	Copper_D	Iron_T	Lead_D	Strontium_D	Strontium_T	Vanadium_T
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FEQG (ECCC)	AQF44	6	0.492	0.005	0.00039	0.000642	0.66	8.2	2.5	2.5	0.12
FEQG (ECCC)	AQF44	7	0.379	0.005	0.000388	0.000642	0.66	7.91	2.5	2.5	0.12
FEQG (ECCC)	AQF44	8	0.682	0.005	0.000403	0.000642	0.66	8.54	2.5	2.5	0.12
FEQG (ECCC)	AQF44	9	0.721	0.005	0.000427	0.000642	0.66	9.26	2.5	2.5	0.12
FEQG (ECCC)	AQF44	10	0.353	0.005	0.000418	0.000642	0.66	8.08	2.5	2.5	0.12
FEQG (ECCC)	AQF44	11	0.487	0.005	0.000427	0.000642	0.66	8.67	2.5	2.5	0.12
FEQG (ECCC)	AQF44	12	0.26	0.005	0.000388	0.000642	0.66	7.91	2.5	2.5	0.12
FEQG (ECCC)	AQF45	1	0.304	0.005	0.000396	0.0002	0.57	7.95	2.5	2.5	0.12
FEQG (ECCC)	AQF45	2	0.0826	0.005	0.000396	0.0002	0.57	7.95	2.5	2.5	0.12
FEQG (ECCC)	AQF45	3	0.152	0.005	0.000453	0.0002	0.57	8.58	2.5	2.5	0.12
FEQG (ECCC)	AQF45	4	0.311	0.005	0.000396	0.0002	0.57	8.18	2.5	2.5	0.12
FEQG (ECCC)	AQF45	5	0.304	0.005	0.000424	0.0002	0.57	8.89	2.5	2.5	0.12
FEQG (ECCC)	AQF45	6	0.513	0.005	0.000396	0.0002	0.57	8.13	2.5	2.5	0.12
FEQG (ECCC)	AQF45	7	0.266	0.005	0.000396	0.0002	0.57	8.12	2.5	2.5	0.12
FEQG (ECCC)	AQF45	8	0.583	0.005	0.00041	0.0002	0.57	8.83	2.5	2.5	0.12
FEQG (ECCC)	AQF45	9	0.694	0.005	0.000427	0.0002	0.57	9.47	2.5	2.5	0.12
FEQG (ECCC)	AQF45	10	0.118	0.005	0.000424	0.0002	0.57	8.25	2.5	2.5	0.12
FEQG (ECCC)	AQF45	11	0.468	0.005	0.000431	0.0002	0.57	8.56	2.5	2.5	0.12
FEQG (ECCC)	AQF45	12	0.0826	0.005	0.000442	0.0002	0.57	8.15	2.5	2.5	0.12
FEQG (ECCC)	AQF6_10	10	0.676	0.005	0.00132	0.00025	0.33	13	2.5	2.5	0.12
FEQG (ECCC)	AQF6_10P	10	0.0961	0.005	0.000281	0.00025	0.33	3.89	2.5	2.5	0.12
FEQG (ECCC)	AQF6_15	10	0.161	0.005	0.000281	0.00025	0.33	5.87	2.5	2.5	0.12
FEQG (ECCC)	AQF6_2.5	10	0.606	0.005	0.0011	0.00025	0.33	12.4	2.5	2.5	0.12
FEQG (ECCC)	AQF6_25	10	0.148	0.005	0.000281	0.00025	0.33	5.51	2.5	2.5	0.12
FEQG (ECCC)	AQF6_5	10	0.159	0.005	0.000281	0.00025	0.33	5.81	2.5	2.5	0.12
FEQG (ECCC)	AQF6_60	10	0.0961	0.005	0.000281	0.00025	0.33	3.89	2.5	2.5	0.12
FEQG (ECCC)	AQF6_90P	10	0.0961	0.005	0.000281	0.00025	0.33	3.89	2.5	2.5	0.12
FEQG (ECCC)	AQF6_Med	10	0.0961	0.005	0.000281	0.00025	0.33	3.89	2.5	2.5	0.12

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Table NOA-02-01-8: Baseline Exceedances of Water Quality Guidelines; Hughes River Site AQF40

Parameter	Month of WQG Exceedance[1]	Baseline Concentration (mg/L)	Water Quality Guideline (Freshwater Aquatic Life)					Magnitude of Exceedance (x-fold above guideline)				
			CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)	CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)
Aluminum_T	1	0.0384	0.005	-	0.005	-	0.117	7.68	-	7.68	-	-
Aluminum_T	**2***	0.0367	0.005	-	0.005	-	0.117	7.34	-	7.34	-	-
Aluminum_T	3	0.0349	0.005	-	0.005	-	0.233	6.98	-	6.98	-	-
Aluminum_T	7	0.0491	0.005	-	0.005	-	0.226	9.82	-	9.82	-	-
Aluminum_T	**12***	0.0604	0.005	-	0.005	-	0.117	12.1	-	12.1	-	-
Copper_D	1	0.00278	-	-	0.0012	0.00147	0.000279	-	-	2.32	1.89	9.96
Copper_D	**2***	0.00199	-	-	0.0012	0.00147	0.000279	-	-	1.66	1.35	7.13
Copper_D	3	0.0012	-	-	0.00151	0.00189	0.000279	-	-	-	-	4.3
Copper_D	4	0.00205	-	-	0.0012	0.00147	0.000279	-	-	1.71	1.39	7.35
Copper_D	5	0.00056	-	-	0.00142	0.00177	0.000279	-	-	-	-	2.01
Copper_D	6	0.00032	-	-	0.00126	0.00155	0.000279	-	-	-	-	1.15
Copper_D	7	0.00031	-	-	0.0012	0.00147	0.000279	-	-	-	-	1.11
Copper_D	8	0.0003	-	-	0.00123	0.0015	0.000279	-	-	-	-	1.08
Copper_D	9	0.00264	-	-	0.00125	0.00153	0.000279	-	-	2.11	1.73	9.46
Copper_D	10	0.00158	-	-	0.00133	0.00164	0.000279	-	-	1.19	-	5.66
Copper_D	11	0.00504	-	-	0.00131	0.00161	0.000279	-	-	3.85	3.13	18.1
Copper_D	**12***	0.00391	-	-	0.0012	0.00147	0.000279	-	-	3.26	2.66	14
Iron_T	5	0.311	0.3	-	0.3	-	0.6	1.04	-	1.04	-	-
Iron_T	6	0.342	0.3	-	0.3	-	0.6	1.14	-	1.14	-	-
Zinc_D	11	0.0103	0.00709	0.0204	0.0175	0.0174	-	1.45	-	-	-	-
Zinc_D	**12***	0.00745	0.00589	0.0186	0.0161	0.016	-	1.26	-	-	-	-

Notes:

[1] Months bolded with asterisks represent calculated baseline values (average of neighbouring months); values used as model inputs when measured data did not exist for the month.

CWQG = Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life by Canadian Council of Ministers of the Environment (CCME 2024)

MWQG = Manitoba Water Quality Standards Objectives and Guidelines for Freshwater Aquatic Life - Manitoba (MWS 2011).

FEQG = Federal Environmental Quality Guideline (Environment and Climate Change Canada; 2024)

The BC WQG (British Columbia Water Quality Guidelines) for the protection of freshwater aquatic life were used in cases where a CWQG, MWQG, or FEQG was not available. The BC WQG are not shown in this table because no POPCs were identified as a result of exceeding the BC WQG.

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Table NOA-02-01-9: Baseline Exceedances of Water Quality Guidelines; Hughes River Site AQF41

Parameter	Month of WQG Exceedance[1]	Baseline Concentration (mg/L)	Water Quality Guideline (Freshwater Aquatic Life)					Magnitude of Exceedance (x-fold above guideline)				
			CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)	CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)
Aluminum_T	1	0.04	0.005		0.005		0.0769	8		8		
Aluminum_T	**2***	0.0663	0.005		0.005		0.0769	13.3		13.3		
Aluminum_T	3	0.0926	0.005		0.005		0.199	18.5		18.5		
Aluminum_T	4	0.0331	0.005		0.005		0.232	6.62		6.62		
Aluminum_T	**12***	0.0383	0.005		0.005		0.0769	7.66		7.66		
Chromium_T	1	0.00105	0.001					1.05				
Copper_D	1	0.00388			0.00119	0.00145	0.0002			3.26	2.68	19.4
Copper_D	**2***	0.00212			0.00118	0.00145	0.0002			1.8	1.46	10.6
Copper_D	3	0.00035			0.00146	0.00182	0.0002					1.75
Copper_D	4	0.00174			0.00119	0.00145	0.0002			1.46	1.2	8.7
Copper_D	5	0.00166			0.00133	0.00164	0.0002			1.25	1.01	8.3
Copper_D	6	0.00062			0.00124	0.00152	0.0002					3.1
Copper_D	7	0.00021			0.00119	0.00145	0.0002					1.05
Copper_D	8	0.00028			0.0012	0.00146	0.0002					1.4
Copper_D	9	0.00042			0.00129	0.00159	0.0002					2.1
Copper_D	10	0.00031			0.00133	0.00164	0.0002					1.55
Copper_D	11	0.0041			0.00128	0.00158	0.0002			3.2	2.59	20.5
Copper_D	**12***	0.00399			0.00118	0.00145	0.0002			3.38	2.75	19.9
Iron_T	**2***	0.422	0.3		0.3		0.6	1.41		1.41		
Iron_T	3	0.553	0.3		0.3		0.6	1.84		1.84		
Iron_T	5	0.381	0.3		0.3		0.6	1.27		1.27		
Iron_T	6	0.488	0.3		0.3		0.6	1.63		1.63		
Phosphorus_T	11	0.031			0.025					1.24		
Phosphorus_T	**12***	0.028			0.025					1.12		

Notes:

[1] Months bolded with asterisks represent calculated baseline values (average of neighbouring months); values used as model inputs when measured data did not exist for the month.

CWQG = Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life by Canadian Council of Ministers of the Environment (CCME 2024)

MWQG = Manitoba Water Quality Standards Objectives and Guidelines for Freshwater Aquatic Life - Manitoba (MWS 2011).

FEQG = Federal Environmental Quality Guideline (Environment and Climate Change Canada; 2024)

The BC WQG (British Columbia Water Quality Guidelines) for the protection of freshwater aquatic life were used in cases

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Table NOA-02-01-10: Baseline Exceedances of Water Quality Guidelines; Hughes River Site AQF42

Parameter	Month of WQG Exceedance[1]	Baseline Concentration (mg/L)	Water Quality Guideline (Freshwater Aquatic Life)						Magnitude of Exceedance (x-fold above guideline)					
			CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)	MDMER Limit	CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)	MDMER Limit
Zinc_D	5	0.0256	0.00994	0.0206	0.0178	0.0176	-	-	2.58	1.24	1.44	1.45	-	-
Aluminum_T	3	0.125	0.1	-	0.1	-	0.383	-	1.25	-	1.25	-	-	-
Aluminum_T	4	0.0381	0.005	-	0.005	-	0.162	-	7.62	-	7.62	-	-	-
Aluminum_T	5	0.054	0.005	-	0.005	-	0.178	-	10.8	-	10.8	-	-	-
Aluminum_T	10	0.042	0.005	-	0.005	-	0.215	-	8.4	-	8.4	-	-	-
Aluminum_T	11	0.158	0.1	-	0.1	-	0.516	-	1.58	-	1.58	-	-	-
Aluminum_T	**12***	0.105	0.005	-	0.005	-	0.162	-	21	-	21	-	-	-
Chromium_T	7	0.00127	0.001	-	-	-	-	-	1.27	-	-	-	-	-
Copper_D	1	0.00323	-	-	0.00118	0.00144	0.000381	-	-	-	2.74	2.24	8.48	-
Copper_D	2	0.00197	-	-	0.00159	0.00199	0.000381	-	-	-	1.24	-	5.17	-
Copper_D	4	0.00253	-	-	0.00118	0.00144	0.000381	-	-	-	2.14	1.76	6.64	-
Copper_D	5	0.00069	-	-	0.00133	0.00164	0.000381	-	-	-	-	-	1.81	-
Copper_D	8	0.00042	-	-	0.00123	0.00151	0.000381	-	-	-	-	-	1.1	-
Copper_D	10	0.00045	-	-	0.00134	0.00165	0.000381	-	-	-	-	-	1.18	-
Copper_D	11	0.00152	-	-	0.00138	0.00171	0.000381	-	-	-	1.1	-	3.99	-
Copper_D	**12***	0.00238	-	-	0.00118	0.00144	0.000381	-	-	-	2.02	1.65	6.25	-
Copper_T	3	0.00454	0.002	-	-	-	-	0.1	2.27	-	-	-	-	-
Iron_T	1	0.319	0.3	-	0.3	-	0.64	-	1.06	-	1.06	-	-	-
Iron_T	2	0.353	0.3	-	0.3	-	0.64	-	1.18	-	1.18	-	-	-
Iron_T	3	0.586	0.3	-	0.3	-	0.64	-	1.95	-	1.95	-	-	-
Iron_T	5	0.485	0.3	-	0.3	-	0.64	-	1.62	-	1.62	-	-	-
Iron_T	6	0.361	0.3	-	0.3	-	0.64	-	1.2	-	1.2	-	-	-
Iron_T	11	0.421	0.3	-	0.3	-	0.64	-	1.4	-	1.4	-	-	-
Iron_T	**12***	0.37	0.3	-	0.3	-	0.64	-	1.23	-	1.23	-	-	-
Phosphorus_T	4	0.0303	-	-	0.025	-	-	-	-	-	1.21	-	-	-
TSS_T	11	35.3	-	-	-	-	-	15	-	-	-	-	-	2.35
TSS_T	**12***	18.4	-	-	-	-	-	15	-	-	-	-	-	1.23

Notes:

[1] Months bolded with asterisks represent calculated baseline values (average of values from months before and after the missing month); values used as model inputs when measured data did not exist for the month.

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MWQG = Manitoba Water Quality Standards Objectives and Guidelines for Freshwater Aquatic Life - Manitoba (MWS 2011).

FEQG = Federal Environmental Quality Guideline (Environment and Climate Change Canada; 2024)

The BC WQG (British Columbia Water Quality Guidelines) for the protection of freshwater aquatic life were used in cases

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Table NOA-02-01-11: Baseline Exceedances of Water Quality Guidelines; Hughes River Site AQF43

Parameter	Month of WQG Exceedance[1]	Baseline Concentration (mg/L)	Water Quality Guideline (Freshwater Aquatic Life)					Magnitude of Exceedance (x-fold above guideline)				
			CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)	CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)
Aluminum_T	**2***	0.0377	0.005	-	0.005	-	0.2	7.54	-	7.54	-	-
Aluminum_T	3	0.036	0.005	-	0.005	-	0.228	7.2	-	7.2	-	-
Aluminum_T	7	0.0579	0.005	-	0.005	-	0.2	11.6	-	11.6	-	-
Aluminum_T	**12***	0.0398	0.005	-	0.005	-	0.2	7.96	-	7.96	-	-
Copper_D	3	0.001	-	-	0.0015	0.00188	0.000736	-	-	-	-	1.36
Copper_D	4	0.00193	-	-	0.00123	0.0015	0.000736	-	-	1.57	1.29	2.62
Copper_D	10	0.0037	-	-	0.00134	0.00165	0.000736	-	-	2.76	2.24	5.03
Copper_D	11	0.00509	-	-	0.00134	0.00165	0.000736	-	-	3.8	3.08	6.92
Copper_D	**12***	0.00274	-	-	0.00123	0.0015	0.000736	-	-	2.23	1.83	3.72
Iron_T	5	0.354	0.3	-	0.3	-	0.66	1.18	-	1.18	-	-
Iron_T	6	0.314	0.3	-	0.3	-	0.66	1.05	-	1.05	-	-
Lead_D	11	0.00626	-	-	0.000209	0.00536	8.28	-	-	30	1.17	-
Lead_D	**12***	0.00314	-	-	0.000186	0.00477	7.91	-	-	16.9	-	-
Phosphorus_T	5	0.031	-	-	0.025	-	-	-	-	1.24	-	-

Notes:

[1] Months bolded with asterisks represent calculated baseline values (average of neighbouring months); values used as model inputs when measured data did not exist for the month.

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MWQG = Manitoba Water Quality Standards Objectives and Guidelines for Freshwater Aquatic Life - Manitoba (MWS 2011).

FEQG = Federal Environmental Quality Guideline (Environment and Climate Change Canada; 2024)

The BC WQG (British Columbia Water Quality Guidelines) for the protection of freshwater aquatic life were used in

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Table NOA-02-01-12: Baseline Exceedances of Water Quality Guidelines; Hughes River Site AQF44

Parameter	Month of WQG Exceedance[1]	Baseline Concentration (mg/L)	Water Quality Guideline (Freshwater Aquatic Life)					Magnitude of Exceedance (x-fold above guideline)				
			CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)	CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)
Aluminum_T	10	0.109	0.1	-	0.1	-	0.353	1.09	-	1.09	-	-
Copper_D	1	0.00373	-	-	0.00122	0.00149	0.000642	-	-	3.06	2.5	5.81
Copper_D	**2***	0.00299	-	-	0.00122	0.00149	0.000642	-	-	2.45	2.01	4.66
Copper_D	3	0.00225	-	-	0.00156	0.00195	0.000642	-	-	1.44	1.15	3.5
Copper_D	4	0.00179	-	-	0.00122	0.00149	0.000642	-	-	1.47	1.2	2.79
Copper_D	6	0.00136	-	-	0.00123	0.00151	0.000642	-	-	1.11	-	2.12
Copper_D	11	0.00457	-	-	0.00148	0.00185	0.000642	-	-	3.09	2.47	7.12
Copper_D	**12***	0.00415	-	-	0.00122	0.00149	0.000642	-	-	3.4	2.79	6.46
Iron_T	5	0.36	0.3	-	0.3	-	0.66	1.2	-	1.2	-	-
Iron_T	6	0.321	0.3	-	0.3	-	0.66	1.07	-	1.07	-	-
Iron_T	10	0.354	0.3	-	0.3	-	0.66	1.18	-	1.18	-	-

Notes:

[1] Months bolded with asterisks represent calculated baseline values (average of neighbouring months); values used as model inputs when measured data did not exist for the month.

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MWQG = Manitoba Water Quality Standards Objectives and Guidelines for Freshwater Aquatic Life - Manitoba (MWS 2011).

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The BC WQG (British Columbia Water Quality Guidelines) for the protection of freshwater aquatic life were used in cases

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Table NOA-02-01-13: Baseline Exceedances of Water Quality Guidelines; Hughes River Site AQF45

Parameter	Month of WQG Exceedance[1]	Baseline Concentration (mg/L)	Water Quality Guideline (Freshwater Aquatic Life)					Magnitude of Exceedance (x-fold above guideline)				
			CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)	CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)
Aluminum_T	**2***	0.0474	0.005	-	0.005	-	0.0826	9.48	-	9.48	-	-
Aluminum_T	3	0.0494	0.005	-	0.005	-	0.152	9.88	-	9.88	-	-
Aluminum_T	8	0.112	0.1	-	0.1	-	0.583	1.12	-	1.12	-	-
Aluminum_T	10	0.0646	0.005	-	0.005	-	0.118	12.9	-	12.9	-	-
Aluminum_T	12	0.0585	0.005	-	0.005	-	0.0826	11.7	-	11.7	-	-
Copper_D	1	0.00292	-	-	0.00127	0.00156	0.0002	-	-	2.3	1.87	14.6
Copper_D	**2***	0.00164	-	-	0.00127	0.00156	0.0002	-	-	1.29	1.05	8.2
Copper_D	3	0.000365	-	-	0.00168	0.00212	0.0002	-	-	-	-	1.82
Copper_D	4	0.0026	-	-	0.00127	0.00156	0.0002	-	-	2.05	1.67	13
Copper_D	5	0.00039	-	-	0.00146	0.00182	0.0002	-	-	-	-	1.95
Copper_D	6	0.00031	-	-	0.00127	0.00156	0.0002	-	-	-	-	1.55
Copper_D	7	0.00035	-	-	0.00127	0.00156	0.0002	-	-	-	-	1.75
Copper_D	8	0.00068	-	-	0.00137	0.00169	0.0002	-	-	-	-	3.4
Copper_D	9	0.00028	-	-	0.00148	0.00185	0.0002	-	-	-	-	1.4
Copper_D	10	0.00252	-	-	0.00146	0.00182	0.0002	-	-	1.73	1.38	12.6
Copper_D	11	0.00418	-	-	0.00151	0.00189	0.0002	-	-	2.77	2.21	20.9
Copper_D	12	0.00022	-	-	0.0016	0.00201	0.0002	-	-	-	-	1.1
Iron_T	3	0.304	0.3	-	0.3	-	0.57	1.01	-	1.01	-	-
Iron_T	5	0.363	0.3	-	0.3	-	0.57	1.21	-	1.21	-	-
Iron_T	6	0.325	0.3	-	0.3	-	0.57	1.08	-	1.08	-	-
Iron_T	8	0.305	0.3	-	0.3	-	0.57	1.02	-	1.02	-	-

Notes:

[1] Months bolded with asterisks represent calculated baseline values (average of neighbouring months); values used as model inputs when measured data did not exist for the month.

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MWQG = Manitoba Water Quality Standards Objectives and Guidelines for Freshwater Aquatic Life - Manitoba (MWS 2011).

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The BC WQG (British Columbia Water Quality Guidelines) for the protection of freshwater aquatic life were used in cases

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Table NOA-02-01-14: Baseline Exceedances of Water Quality Guidelines; Aerated East Pit (Site AQF6)

Site	Sampling Depth (m from surface)	Parameter	Baseline Concentration (mg/L)	Water Quality Guideline (Freshwater Aquatic Life)						Magnitude of Exceedance (x-fold above guideline)					
				CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)	MDMER Limits	CCME (Long-term)	CCME (Short-term)	MWQG (long-term)	MWQG (Short-term)	FEQG (Long-term)	MDMER Limits
AQF6_2.5	2.5 m	Arsenic_T	0.00551	0.005	-	-	-	-	0.1	1.1	-	-	-	-	-
		Copper_D	0.00058	-	-	0.0104	0.0158	0.0	-	-	-	-	-	2.3	-
		Iron_T	0.998	0.3	-	0.3	-	0.3	-	3.3	-	3.3	-	3.0	-
		Manganese_D	0.854	0.64	7.75	-	-	-	-	1.3	-	-	-	-	-
AQF6_5	5 m	Arsenic_T	0.00561	0.005	-	-	-	-	0.1	1.1	-	-	-	-	-
		Copper_D	0.00241	-	-	0.000628	0.000717	0.0	-	-	-	3.8	3.4	9.6	-
		Iron_T	1	0.3	-	0.3	-	0.3	-	3.3	-	3.3	-	3.0	-
		Manganese_D	0.849	0.33	2	-	-	-	-	2.6	-	-	-	-	-
		Phosphorus_T	0.027	-	-	0.025	-	-	-	-	-	1.1	-	-	-
AQF6_10	10 m	Arsenic_T	0.00557	0.005	-	-	-	-	0.1	1.1	-	-	-	-	-
		Copper_D	0.0005	-	-	0.0153	0.0242	0.0	-	-	-	-	-	2.0	-
		Iron_T	1	0.3	-	0.3	-	0.3	-	3.3	-	3.3	-	3.0	-
		Manganese_D	0.858	0.83	11.5	-	-	-	-	1.0	-	-	-	-	-
		Phosphorus_T	0.038	-	-	0.025	-	-	-	-	-	1.5	-	-	-
AQF6_15	15 m	Arsenic_T	0.00559	0.005	-	-	-	-	0.1	1.1	-	-	-	-	-
		Copper_D	0.00286	-	-	0.000628	0.000717	0.0	-	-	-	4.6	4.0	11.4	-
		Iron_T	0.991	0.3	-	0.3	-	0.3	-	3.3	-	3.3	-	3.0	-
		Lead_D	0.000102	-	-	0.0000755	0.00194	5.9	-	-	-	1.4	-	-	-
		Manganese_D	0.837	0.33	2	-	-	-	-	2.5	-	-	-	-	-
AQF6_25	25 m	Arsenic_T	0.00563	0.005	-	-	-	-	0.1	1.1	-	-	-	-	-
		Copper_D	0.00103	-	-	0.000628	0.000717	0.0	-	-	-	1.6	1.4	4.1	-
		Iron_T	1.03	0.3	-	0.3	-	0.3	-	3.4	-	3.4	-	3.1	-
		Manganese_D	0.853	0.33	2	-	-	-	-	2.6	-	-	-	-	-
AQF6_60	60 m	Arsenic_T	0.00567	0.005	-	-	-	-	0.1	1.1	-	-	-	-	-
		Copper_D	0.00232	-	-	0.000628	0.000717	0.0	-	-	-	3.7	3.2	9.3	-
		Iron_T	0.992	0.3	-	0.3	-	0.3	-	3.3	-	3.3	-	3.0	-
		Manganese_D	0.84	0.33	2	-	-	-	-	2.6	-	-	-	-	-
AQF6_10P	Pooled	Arsenic_T	0.00554	0.005	-	-	-	-	0.1	1.1	-	-	-	-	-
		Copper_D	0.00054	-	-	0.000628	0.000717	0.0	-	-	-	-	-	2.2	-
		Iron_T	0.992	0.3	-	0.3	-	0.3	-	3.3	-	3.3	-	3.0	-
		Manganese_D	0.838	0.33	2	-	-	-	-	2.5	-	-	-	-	-
AQF6_Median	Pooled	Arsenic_T	0.0056	0.005	-	-	-	-	0.1	1.1	-	-	-	-	-
		Copper_D	0.00168	-	-	0.000628	0.000717	0.0	-	-	-	2.7	2.3	6.7	-
		Iron_T	0.999	0.3	-	0.3	-	0.3	-	3.3	-	3.3	-	3.0	-
		Manganese_D	0.851	0.33	2	-	-	-	-	2.6	-	-	-	-	-
AQF6_90P	Pooled	Arsenic_T	0.00565	0.005	-	-	-	-	0.1	1.1	-	-	-	-	-
		Copper_D	0.00264	-	-	0.000628	0.000717	0.0	-	-	-	4.2	3.7	10.5	-
		Iron_T	1.02	0.3	-	0.3	-	0.3	-	3.4	-	3.4	-	3.1	-
		Lead_D	0.0000995	-	-	0.0000755	0.00194	3.9	-	-	-	1.3	-	-	-
		Manganese_D	0.856	0.33	2	-	-	-	-	2.6	-	-	-	-	-
		Phosphorus_T	0.0325	-	-	0.025	-	-	-	-	-	1.3	-	-	-

East Pit (AQF6) data shown here represent post-aeration (mixed) conditions 36 hours after mixing (sampled October 8, 2021).
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MWQG = Manitoba Water Quality Standards Objectives and Guidelines for Freshwater Aquatic Life - Manitoba (MWS 2011).
FEQG = Federal Environmental Quality Guideline (Environment and Climate Change Canada; 2024)
MDMER = Metal and Diamond Mine Effluent Regulations (2024)
The BC WQG (British Columbia Water Quality Guidelines) for the protection of freshwater aquatic life were used in cases

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Table NO2-01-02-15: Predicted Parameters of Potential Concern; 2x Pump Rate, 10th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
2xpump_10thFlow_10thPit	AQF40	Copper_D	6			0.00126	0.00155	0.000279	0.000329	0.00032	1.030					1.18
		Copper_D	7			0.0012	0.00147	0.000279	0.00032	0.00031	1.034					1.15
		Copper_D	8			0.00123	0.0015	0.000279	0.000311	0.0003	1.037					1.11
		Iron_T	5	0.3		0.3		0.6	0.338	0.311	1.085	1.13		1.13		
		Iron_T	6	0.3		0.3		0.6	0.37	0.342	1.082	1.23		1.23		
	AQF42	Copper_D	8			0.00123	0.00151	0.000381	0.000426	0.00042	1.013					1.12
		Copper_D	10			0.00134	0.00165	0.000381	0.000454	0.00045	1.008					1.19
		Iron_T	5	0.3		0.3		0.64	0.505	0.485	1.041	1.68		1.68		
		Iron_T	6	0.3		0.3		0.64	0.388	0.361	1.075	1.29		1.29		
	AQF43	Iron_T	5	0.3		0.3		0.66	0.379	0.354	1.070	1.26		1.26		
		Iron_T	6	0.3		0.3		0.66	0.343	0.314	1.093	1.14		1.14		
	AQF44	Iron_T	5	0.3		0.3		0.66	0.385	0.36	1.068	1.28		1.28		
		Iron_T	6	0.3		0.3		0.66	0.35	0.321	1.090	1.17		1.17		
		Iron_T	10	0.3		0.3		0.66	0.381	0.354	1.076	1.27		1.27		
	AQF45	Copper_D	5			0.00146	0.00182	0.0002	0.000396	0.00039	1.015					1.98
		Copper_D	6			0.00127	0.00156	0.0002	0.00032	0.00031	1.032					1.6
		Copper_D	7			0.00127	0.00156	0.0002	0.000359	0.00035	1.025					1.79
		Copper_D	9			0.00148	0.00185	0.0002	0.000292	0.00028	1.042					1.46
		Iron_T	5	0.3		0.3		0.57	0.388	0.363	1.068	1.29		1.29		
		Iron_T	6	0.3		0.3		0.57	0.354	0.325	1.088	1.18		1.18		
		Iron_T	8	0.3		0.3		0.57	0.337	0.305	1.104	1.12		1.12		
2xpump_10thFlow_medianPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000604	0.00056	1.078	-	-	-	-	2.16
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000378	0.00032	1.182	-	-	-	-	1.36
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000372	0.00031	1.201	-	-	-	-	1.33
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000363	0.0003	1.212	-	-	-	-	1.3
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00158	0.00158	1.003	-	-	1.19	-	5.68
		Iron_T	5	0.3	-	0.3	-	0.6	0.338	0.311	1.086	1.13	-	1.13	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.37	0.342	1.083	1.23	-	1.23	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.000728	0.00069	1.056	-	-	-	-	1.91
		Copper_D	6	-	-	0.00118	0.00144	0.000381	0.000388	0.00033	1.175	-	-	-	-	1.02
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000478	0.00042	1.138	-	-	-	-	1.25
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000501	0.00045	1.114	-	-	-	-	1.32
		Iron_T	5	0.3	-	0.3	-	0.64	0.505	0.485	1.041	1.68	-	1.68	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.388	0.361	1.076	1.29	-	1.29	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.379	0.354	1.071	1.26	-	1.26	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.343	0.314	1.094	1.14	-	1.14	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00137	0.00136	1.010	-	-	1.12	-	2.14
		Iron_T	5	0.3	-	0.3	-	0.66	0.385	0.36	1.069	1.28	-	1.28	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.35	0.321	1.091	1.17	-	1.17	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.381	0.354	1.076	1.27	-	1.27	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.00044	0.00039	1.129	-	-	-	-	2.2
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000369	0.00031	1.189	-	-	-	-	1.84
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.00041	0.00035	1.173	-	-	-	-	2.05
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000726	0.00068	1.068	-	-	-	-	3.63
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000344	0.00028	1.228	-	-	-	-	1.72
		Iron_T	5	0.3	-	0.3	-	0.57	0.388	0.363	1.068	1.29	-	1.29	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.354	0.325	1.089	1.18	-	1.18	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.337	0.305	1.105	1.12	-	1.12	-	-

Table NO2-01-02-15: Predicted Parameters of Potential Concern; 2x Pump Rate, 10th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
2xpump_10thFlow_90thPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000641	0.00056	1.145	-	-	-	-	2.3
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.00042	0.00032	1.311	-	-	-	-	1.5
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000416	0.00031	1.342	-	-	-	-	1.49
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000408	0.0003	1.359	-	-	-	-	1.46
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00162	0.00158	1.028	-	-	1.22	-	5.82
		Iron_T	5	0.3	-	0.3	-	0.6	0.338	0.311	1.088	1.13	-	1.13	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.371	0.342	1.085	1.24	-	1.24	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.000766	0.00069	1.110	-	-	-	-	2.01
		Copper_D	6	-	-	0.00118	0.00144	0.000381	0.000429	0.00033	1.300	-	-	-	-	1.13
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000522	0.00042	1.243	-	-	-	-	1.37
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000542	0.00045	1.204	-	-	-	-	1.42
		Iron_T	5	0.3	-	0.3	-	0.64	0.506	0.485	1.043	1.69	-	1.69	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.389	0.361	1.078	1.3	-	1.3	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.38	0.354	1.073	1.27	-	1.27	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.344	0.314	1.096	1.15	-	1.15	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00141	0.00136	1.040	-	-	1.15	-	2.2
		Iron_T	5	0.3	-	0.3	-	0.66	0.386	0.36	1.071	1.29	-	1.29	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.351	0.321	1.093	1.17	-	1.17	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.382	0.354	1.078	1.27	-	1.27	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000478	0.00039	1.225	-	-	-	-	2.39
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.00041	0.00031	1.322	-	-	-	-	2.05
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000454	0.00035	1.298	-	-	-	-	2.27
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.00077	0.00068	1.133	-	-	-	-	3.85
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000388	0.00028	1.385	-	-	-	-	1.94
		Copper_D	10	-	-	0.00146	0.00182	0.0002	0.00252	0.00252	1.002	-	-	1.73	1.39	12.6
		Iron_T	5	0.3	-	0.3	-	0.57	0.388	0.363	1.070	1.29	-	1.29	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.355	0.325	1.091	1.18	-	1.18	-	-
		Iron_T	7	0.3	-	0.3	-	0.57	0.3	0.266	1.128	1	-	1	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.338	0.305	1.107	1.13	-	1.13	-	-

Notes:
Comparisons of predicted results to baseline values and guidelines are based on values rounded to three significant figures.
CCME = Canadian Council of Ministers of the Environment (i.e., long-term and short-term Canadian Water Quality Guidelines for the Protection of Aquatic Life; CWQG-FAL)
MWQG = Manitoba Water Quality Guidelines (i.e., long-term and short-term Tier II and Tier III Manitoba Water Quality Standards, Objectives and Guidelines)
FEQG = Federal Environmetal Quality Guidelines (ECCC)
Parameters ending with _T denote total concentrations; _D denotes dissolved concentrations
Results shown here include identified POPCs in the Hughes River receiving environment sites (AQF40, AQF42, AQF43, AQF44, AQF45) from May to October.
POPC = parameter of potential concern (identified as a predicted value above baseline and a water quality guideline)

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Table NO2-01-02-16: Predicted Parameters of Potential Concern; 2x Pump Rate, 50th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
2xpump_medianFlow_10thPit	AQF40	Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000326	0.00032	1.019	-	-	-		1.17
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000318	0.00031	1.026	-	-	-	-	1.14
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000308	0.0003	1.027	-	-	-	-	1.1
		Iron_T	5	0.3	-	0.3	-	0.6	0.325	0.311	1.045	1.08	-	1.08	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.36	0.342	1.053	1.2	-	1.2	-	-
	AQF42	Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000424	0.00042	1.010	-	-	-	-	1.11
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000453	0.00045	1.007	-	-	-	-	1.19
		Iron_T	5	0.3	-	0.3	-	0.64	0.495	0.485	1.022	1.65	-	1.65	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.379	0.361	1.049	1.26	-	1.26	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.367	0.354	1.037	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.333	0.314	1.061	1.11	-	1.11	-	-
	AQF44	Iron_T	5	0.3	-	0.3	-	0.66	0.373	0.36	1.036	1.24	-	1.24	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.34	0.321	1.059	1.13	-	1.13	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.375	0.354	1.059	1.25	-	1.25	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000393	0.00039	1.008	-	-	-	-	1.97
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000316	0.00031	1.021	-	-	-	-	1.58
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000357	0.00035	1.019	-	-	-	-	1.78
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000289	0.00028	1.032	-	-	-	-	1.44
		Iron_T	5	0.3	-	0.3	-	0.57	0.376	0.363	1.036	1.25	-	1.25	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.344	0.325	1.058	1.15	-	1.15	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.328	0.305	1.077	1.09	-	1.09	-	-
2xpump_medianFlow_medianPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000583	0.00056	1.041	-	-	-	-	2.09
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000358	0.00032	1.119	-	-	-	-	1.28
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000357	0.00031	1.152	-	-	-	-	1.28
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000347	0.0003	1.156	-	-	-	-	1.24
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00158	0.00158	1.002	-	-	1.19	-	5.67
		Iron_T	5	0.3	-	0.3	-	0.6	0.325	0.311	1.046	1.08	-	1.08	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.36	0.342	1.054	1.2	-	1.2	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.00071	0.00069	1.029	-	-	-	-	1.86
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000463	0.00042	1.102	-	-	-	-	1.21
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.00049	0.00045	1.090	-	-	-	-	1.29
		Iron_T	5	0.3	-	0.3	-	0.64	0.496	0.485	1.022	1.65	-	1.65	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.379	0.361	1.050	1.26	-	1.26	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.367	0.354	1.038	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.333	0.314	1.061	1.11	-	1.11	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00137	0.00136	1.007	-	-	1.11	-	2.13
		Iron_T	5	0.3	-	0.3	-	0.66	0.373	0.36	1.037	1.24	-	1.24	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.34	0.321	1.059	1.13	-	1.13	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.375	0.354	1.060	1.25	-	1.25	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000417	0.00039	1.068	-	-	-	-	2.08
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000348	0.00031	1.124	-	-	-	-	1.74
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000396	0.00035	1.130	-	-	-	-	1.98
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000714	0.00068	1.050	-	-	-	-	3.57
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000328	0.00028	1.172	-	-	-	-	1.64
		Iron_T	5	0.3	-	0.3	-	0.57	0.376	0.363	1.036	1.25	-	1.25	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.344	0.325	1.058	1.15	-	1.15	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.329	0.305	1.077	1.1	-	1.1	-	-

Table NO2-01-02-16: Predicted Parameters of Potential Concern; 2x Pump Rate, 50th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
2xpump_medianFlow_90thPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000603	0.00056	1.076	-	-	-	-	2.16
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000385	0.00032	1.204	-	-	-	-	1.38
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.00039	0.00031	1.258	-	-	-	-	1.4
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000379	0.0003	1.265	-	-	-	-	1.36
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00161	0.00158	1.022	-	-	1.21	-	5.79
		Iron_T	5	0.3	-	0.3	-	0.6	0.326	0.311	1.047	1.09	-	1.09	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.361	0.342	1.055	1.2	-	1.2	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.00073	0.00069	1.058	-	-	-	-	1.92
		Copper_D	6	-	-	0.00118	0.00144	0.000381	0.000395	0.00033	1.197	-	-	-	-	1.04
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000495	0.00042	1.179	-	-	-	-	1.3
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000522	0.00045	1.160	-	-	-	-	1.37
		Iron_T	5	0.3	-	0.3	-	0.64	0.496	0.485	1.023	1.65	-	1.65	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.379	0.361	1.051	1.26	-	1.26	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.368	0.354	1.039	1.23	-	1.23	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.334	0.314	1.063	1.11	-	1.11	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.0014	0.00136	1.026	-	-	1.13	-	2.17
		Iron_T	5	0.3	-	0.3	-	0.66	0.374	0.36	1.038	1.25	-	1.25	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.341	0.321	1.061	1.14	-	1.14	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.376	0.354	1.062	1.25	-	1.25	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000436	0.00039	1.119	-	-	-	-	2.18
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000375	0.00031	1.211	-	-	-	-	1.88
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000429	0.00035	1.225	-	-	-	-	2.14
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000746	0.00068	1.098	-	-	-	-	3.73
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000361	0.00028	1.291	-	-	-	-	1.81
		Copper_D	10	-	-	0.00146	0.00182	0.0002	0.00252	0.00252	1.002	-	-	1.73	1.39	12.6
		Iron_T	5	0.3	-	0.3	-	0.57	0.376	0.363	1.037	1.25	-	1.25	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.344	0.325	1.060	1.15	-	1.15	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.329	0.305	1.079	1.1	-	1.1	-	-

Notes:
Comparisons of predicted results to baseline values and guidelines are based on values rounded to three significant figures.
CCME = Canadian Council of Ministers of the Environment (i.e., long-term and short-term Canadian Water Quality Guidelines for the Protection of Aquatic Life; CWQG-FAL)
MWQG = Manitoba Water Quality Guidelines (i.e., long-term and short-term Tier II and Tier III Manitoba Water Quality Standards, Objectives and Guidelines)
FEQG = Federal Environmetal Quality Guidelines (ECCC)
Parameters ending with _T denote total concentrations; _D denotes dissolved concentrations
Results shown here include identified POPCs in the Hughes River receiving environment sites (AQF40, AQF42, AQF43, AQF44, AQF45) from May to October.
POPC = parameter of potential concern (identified as a predicted value above baseline and a water quality guideline)

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Table NO2-01-02-17: Predicted Parameters of Potential Concern; 2x Pump Rate, 90th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
2xpump_90thFlow_10thPit	AQF40	Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000322	0.00032	1.008	-	-	-	-	1.16
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000313	0.00031	1.011	-	-	-	-	1.12
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000304	0.0003	1.012	-	-	-	-	1.09
		Iron_T	5	0.3	-	0.3	-	0.6	0.316	0.311	1.017	1.05	-	1.05	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.349	0.342	1.021	1.16	-	1.16	-	-
	AQF42	Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000422	0.00042	1.004	-	-	-	-	1.11
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000452	0.00045	1.004	-	-	-	-	1.19
		Iron_T	5	0.3	-	0.3	-	0.64	0.489	0.485	1.008	1.63	-	1.63	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.368	0.361	1.019	1.23	-	1.23	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.359	0.354	1.014	1.2	-	1.2	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.322	0.314	1.024	1.07	-	1.07	-	-
	AQF44	Iron_T	5	0.3	-	0.3	-	0.66	0.365	0.36	1.014	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.328	0.321	1.023	1.09	-	1.09	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.366	0.354	1.034	1.22	-	1.22	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000391	0.00039	1.003	-	-	-	-	1.96
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000313	0.00031	1.008	-	-	-	-	1.56
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000353	0.00035	1.008	-	-	-	-	1.76
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000284	0.00028	1.015	-	-	-	-	1.42
		Iron_T	5	0.3	-	0.3	-	0.57	0.368	0.363	1.013	1.23	-	1.23	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.332	0.325	1.023	1.11	-	1.11	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.315	0.305	1.034	1.05	-	1.05	-	-
2xpump_90thFlow_medianPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000569	0.00056	1.015	-	-	-	-	2.04
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000335	0.00032	1.047	-	-	-	-	1.2
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.00033	0.00031	1.066	-	-	-	-	1.18
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.00032	0.0003	1.068	-	-	-	-	1.15
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00158	0.00158	1.001	-	-	1.19	-	5.67
		Iron_T	5	0.3	-	0.3	-	0.6	0.316	0.311	1.017	1.05	-	1.05	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.349	0.342	1.021	1.16	-	1.16	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.000698	0.00069	1.011	-	-	-	-	1.83
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000439	0.00042	1.045	-	-	-	-	1.15
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000473	0.00045	1.051	-	-	-	-	1.24
		Iron_T	5	0.3	-	0.3	-	0.64	0.489	0.485	1.008	1.63	-	1.63	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.368	0.361	1.020	1.23	-	1.23	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.359	0.354	1.014	1.2	-	1.2	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.322	0.314	1.024	1.07	-	1.07	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00136	0.00136	1.003	-	-	1.11	-	2.12
		Iron_T	5	0.3	-	0.3	-	0.66	0.365	0.36	1.014	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.329	0.321	1.024	1.1	-	1.1	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.366	0.354	1.034	1.22	-	1.22	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.0004	0.00039	1.026	-	-	-	-	2
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000325	0.00031	1.049	-	-	-	-	1.63
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.00037	0.00035	1.057	-	-	-	-	1.85
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000695	0.00068	1.022	-	-	-	-	3.47
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000302	0.00028	1.080	-	-	-	-	1.51
		Iron_T	5	0.3	-	0.3	-	0.57	0.368	0.363	1.014	1.23	-	1.23	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.333	0.325	1.023	1.11	-	1.11	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.315	0.305	1.034	1.05	-	1.05	-	-

Table NO2-01-02-17: Predicted Parameters of Potential Concern; 2x Pump Rate, 90th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
2xpump_90thFlow_90thPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000576	0.00056	1.029	-	-	-	-	2.06
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000346	0.00032	1.081	-	-	-	-	1.24
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000345	0.00031	1.113	-	-	-	-	1.24
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000335	0.0003	1.116	-	-	-	-	1.2
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.0016	0.00158	1.013	-	-	1.2	-	5.73
	AQF40	Iron_T	5	0.3	-	0.3	-	0.6	0.316	0.311	1.018	1.05	-	1.05	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.35	0.342	1.022	1.17	-	1.17	-	-
		Copper_D	5	-	-	0.00133	0.00164	0.000381	0.000705	0.00069	1.022	-	-	-	-	1.85
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000453	0.00042	1.079	-	-	-	-	1.19
	AQF42	Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000491	0.00045	1.091	-	-	-	-	1.29
		Iron_T	5	0.3	-	0.3	-	0.64	0.489	0.485	1.008	1.63	-	1.63	-	-
	AQF42	Iron_T	6	0.3	-	0.3	-	0.64	0.368	0.361	1.020	1.23	-	1.23	-	-
		Iron_T	5	0.3	-	0.3	-	0.66	0.359	0.354	1.014	1.2	-	1.2	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.322	0.314	1.025	1.07	-	1.07	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00137	0.00136	1.010	-	-	1.12	-	2.14
		Iron_T	5	0.3	-	0.3	-	0.66	0.365	0.36	1.014	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.329	0.321	1.024	1.1	-	1.1	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.366	0.354	1.035	1.22	-	1.22	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000407	0.00039	1.045	-	-	-	-	2.04
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000336	0.00031	1.084	-	-	-	-	1.68
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000384	0.00035	1.098	-	-	-	-	1.92
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000709	0.00068	1.043	-	-	-	-	3.55
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000318	0.00028	1.136	-	-	-	-	1.59
		Iron_T	5	0.3	-	0.3	-	0.57	0.368	0.363	1.014	1.23	-	1.23	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.333	0.325	1.024	1.11	-	1.11	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.316	0.305	1.035	1.05	-	1.05	-	-

Notes:
Comparisons of predicted results to baseline values and guidelines are based on values rounded to three significant figures.
CCME = Canadian Council of Ministers of the Environment (i.e., long-term and short-term Canadian Water Quality Guidelines for the Protection of Aquatic Life; CWQG-FAL)
MWQG = Manitoba Water Quality Guidelines (i.e., long-term and short-term Tier II and Tier III Manitoba Water Quality Standards, Objectives and Guidelines)
FEQG = Federal Environmetal Quality Guidelines (ECCC)
Parameters ending with _T denote total concentrations; _D denotes dissolved concentrations
Results shown here include identified POPCs in the Hughes River receiving environment sites (AQF40, AQF42, AQF43, AQF44, AQF45) from May to October.
POPC = parameter of potential concern (identified as a predicted value above baseline and a water quality guideline)

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Table NO2-01-02-18: Predicted Parameters of Potential Concern; Base Pump Rate, 10th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
base_10thFlow_10thPit	AQF40	Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000325	0.00032	1.015	-	-	-	-	1.16
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000315	0.00031	1.017	-	-	-	-	1.13
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000306	0.0003	1.019	-	-	-	-	1.1
		Iron_T	5	0.3	-	0.3	-	0.6	0.325	0.311	1.044	1.08	-	1.08	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.356	0.342	1.042	1.19	-	1.19	-	-
	AQF42	Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000423	0.00042	1.007	-	-	-	-	1.11
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000452	0.00045	1.004	-	-	-	-	1.19
		Iron_T	5	0.3	-	0.3	-	0.64	0.495	0.485	1.021	1.65	-	1.65	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.375	0.361	1.038	1.25	-	1.25	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.367	0.354	1.036	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.329	0.314	1.047	1.1	-	1.1	-	-
	AQF44	Iron_T	5	0.3	-	0.3	-	0.66	0.373	0.36	1.035	1.24	-	1.24	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.336	0.321	1.046	1.12	-	1.12	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.368	0.354	1.039	1.23	-	1.23	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000393	0.00039	1.008	-	-	-	-	1.96
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000315	0.00031	1.016	-	-	-	-	1.58
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000354	0.00035	1.013	-	-	-	-	1.77
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000286	0.00028	1.022	-	-	-	-	1.43
		Iron_T	5	0.3	-	0.3	-	0.57	0.376	0.363	1.034	1.25	-	1.25	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.34	0.325	1.045	1.13	-	1.13	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.321	0.305	1.053	1.07	-	1.07	-	-
base_10thFlow_medianPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000582	0.00056	1.040	-	-	-	-	2.09
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.00035	0.00032	1.093	-	-	-	-	1.25
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000342	0.00031	1.103	-	-	-	-	1.23
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000332	0.0003	1.108	-	-	-	-	1.19
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00158	0.00158	1.001	-	-	1.19	-	5.67
		Iron_T	5	0.3	-	0.3	-	0.6	0.325	0.311	1.044	1.08	-	1.08	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.356	0.342	1.042	1.19	-	1.19	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.00071	0.00069	1.028	-	-	-	-	1.86
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.00045	0.00042	1.071	-	-	-	-	1.18
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000476	0.00045	1.058	-	-	-	-	1.25
		Iron_T	5	0.3	-	0.3	-	0.64	0.495	0.485	1.021	1.65	-	1.65	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.375	0.361	1.039	1.25	-	1.25	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.367	0.354	1.036	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.329	0.314	1.048	1.1	-	1.1	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00137	0.00136	1.005	-	-	1.11	-	2.13
		Iron_T	5	0.3	-	0.3	-	0.66	0.373	0.36	1.035	1.24	-	1.24	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.336	0.321	1.046	1.12	-	1.12	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.368	0.354	1.039	1.23	-	1.23	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000416	0.00039	1.066	-	-	-	-	2.08
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.00034	0.00031	1.097	-	-	-	-	1.7
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000381	0.00035	1.088	-	-	-	-	1.9
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000704	0.00068	1.035	-	-	-	-	3.52
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000313	0.00028	1.117	-	-	-	-	1.56
		Iron_T	5	0.3	-	0.3	-	0.57	0.376	0.363	1.035	1.25	-	1.25	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.34	0.325	1.046	1.13	-	1.13	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.321	0.305	1.054	1.07	-	1.07	-	-

Table NO2-01-02-18: Predicted Parameters of Potential Concern; Base Pump Rate, 10th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
base_10thFlow_90thPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000601	0.00056	1.074	-	-	-	-	2.16
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000371	0.00032	1.159	-	-	-	-	1.33
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000364	0.00031	1.175	-	-	-	-	1.31
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000355	0.0003	1.184	-	-	-	-	1.27
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.0016	0.00158	1.014	-	-	1.2	-	5.74
		Iron_T	5	0.3	-	0.3	-	0.6	0.325	0.311	1.045	1.08	-	1.08	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.357	0.342	1.043	1.19	-	1.19	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.000729	0.00069	1.056	-	-	-	-	1.91
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000472	0.00042	1.125	-	-	-	-	1.24
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000497	0.00045	1.104	-	-	-	-	1.3
		Iron_T	5	0.3	-	0.3	-	0.64	0.496	0.485	1.022	1.65	-	1.65	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.375	0.361	1.040	1.25	-	1.25	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.367	0.354	1.037	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.329	0.314	1.049	1.1	-	1.1	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00139	0.00136	1.021	-	-	1.13	-	2.16
		Iron_T	5	0.3	-	0.3	-	0.66	0.373	0.36	1.036	1.24	-	1.24	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.336	0.321	1.048	1.12	-	1.12	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.368	0.354	1.040	1.23	-	1.23	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000435	0.00039	1.115	-	-	-	-	2.17
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000361	0.00031	1.165	-	-	-	-	1.81
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000403	0.00035	1.152	-	-	-	-	2.02
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000726	0.00068	1.068	-	-	-	-	3.63
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000335	0.00028	1.197	-	-	-	-	1.68
		Iron_T	5	0.3	-	0.3	-	0.57	0.376	0.363	1.036	1.25	-	1.25	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.34	0.325	1.047	1.13	-	1.13	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.322	0.305	1.055	1.07	-	1.07	-	-

Notes:
Comparisons of predicted results to baseline values and guidelines are based on values rounded to three significant figures.
CCME = Canadian Council of Ministers of the Environment (i.e., long-term and short-term Canadian Water Quality Guidelines for the Protection of Aquatic Life; CWQG-FAL)
MWQG = Manitoba Water Quality Guidelines (i.e., long-term and short-term Tier II and Tier III Manitoba Water Quality Standards, Objectives and Guidelines)
FEQG = Federal Environmetal Quality Guidelines (ECCC)
Parameters ending with _T denote total concentrations; _D denotes dissolved concentrations
Results shown here include identified POPCs in the Hughes River receiving environment sites (AQF40, AQF42, AQF43, AQF44, AQF45) from May to October.
POPC = parameter of potential concern (identified as a predicted value above baseline and a water quality guideline)

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Table NO2-01-02-19: Predicted Parameters of Potential Concern; Base Pump Rate, 50th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
base_medianFlow_10thPit	AQF40	Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000323	0.00032	1.010	-	-	-	-	1.16
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000314	0.00031	1.013	-	-	-	-	1.13
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000304	0.0003	1.014	-	-	-	-	1.09
		Iron_T	5	0.3	-	0.3	-	0.6	0.318	0.311	1.023	1.06	-	1.06	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.351	0.342	1.027	1.17	-	1.17	-	-
	AQF42	Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000422	0.00042	1.005	-	-	-	-	1.11
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000452	0.00045	1.003	-	-	-	-	1.19
		Iron_T	5	0.3	-	0.3	-	0.64	0.49	0.485	1.011	1.63	-	1.63	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.37	0.361	1.025	1.23	-	1.23	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.361	0.354	1.019	1.2	-	1.2	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.324	0.314	1.031	1.08	-	1.08	-	-
	AQF44	Iron_T	5	0.3	-	0.3	-	0.66	0.367	0.36	1.018	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.331	0.321	1.030	1.1	-	1.1	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.365	0.354	1.030	1.22	-	1.22	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000392	0.00039	1.004	-	-	-	-	1.96
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000313	0.00031	1.011	-	-	-	-	1.57
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000353	0.00035	1.010	-	-	-	-	1.77
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000285	0.00028	1.016	-	-	-	-	1.42
		Iron_T	5	0.3	-	0.3	-	0.57	0.37	0.363	1.018	1.23	-	1.23	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.335	0.325	1.029	1.12	-	1.12	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.317	0.305	1.039	1.06	-	1.06	-	-
base_medianFlow_medianPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000572	0.00056	1.021	-	-	-	-	2.05
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000339	0.00032	1.060	-	-	-	-	1.22
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000334	0.00031	1.077	-	-	-	-	1.2
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000324	0.0003	1.079	-	-	-	-	1.16
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00158	0.00158	1.001	-	-	1.19	-	5.67
		Iron_T	5	0.3	-	0.3	-	0.6	0.318	0.311	1.023	1.06	-	1.06	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.351	0.342	1.027	1.17	-	1.17	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.0007	0.00069	1.015	-	-	-	-	1.84
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000442	0.00042	1.052	-	-	-	-	1.16
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000471	0.00045	1.046	-	-	-	-	1.24
		Iron_T	5	0.3	-	0.3	-	0.64	0.49	0.485	1.011	1.63	-	1.63	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.37	0.361	1.025	1.23	-	1.23	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.361	0.354	1.019	1.2	-	1.2	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.324	0.314	1.031	1.08	-	1.08	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00136	0.00136	1.003	-	-	1.11	-	2.13
		Iron_T	5	0.3	-	0.3	-	0.66	0.367	0.36	1.019	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.331	0.321	1.030	1.1	-	1.1	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.365	0.354	1.031	1.22	-	1.22	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000403	0.00039	1.034	-	-	-	-	2.02
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000329	0.00031	1.063	-	-	-	-	1.65
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000373	0.00035	1.066	-	-	-	-	1.87
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000697	0.00068	1.025	-	-	-	-	3.49
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000305	0.00028	1.088	-	-	-	-	1.52
		Iron_T	5	0.3	-	0.3	-	0.57	0.37	0.363	1.018	1.23	-	1.23	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.335	0.325	1.030	1.12	-	1.12	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.317	0.305	1.039	1.06	-	1.06	-	-

Table NO2-01-02-19: Predicted Parameters of Potential Concern; Base Pump Rate, 50th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
base_medianFlow_90thPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000582	0.00056	1.039	-	-	-	-	2.08
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000353	0.00032	1.103	-	-	-	-	1.27
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000351	0.00031	1.131	-	-	-	-	1.26
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.00034	0.0003	1.135	-	-	-	-	1.22
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.0016	0.00158	1.011	-	-	1.2	-	5.73
		Iron_T	5	0.3	-	0.3	-	0.6	0.318	0.311	1.024	1.06	-	1.06	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.352	0.342	1.028	1.17	-	1.17	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.00071	0.00069	1.029	-	-	-	-	1.86
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000458	0.00042	1.091	-	-	-	-	1.2
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000487	0.00045	1.082	-	-	-	-	1.28
		Iron_T	5	0.3	-	0.3	-	0.64	0.491	0.485	1.011	1.64	-	1.64	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.37	0.361	1.026	1.23	-	1.23	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.361	0.354	1.019	1.2	-	1.2	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.324	0.314	1.032	1.08	-	1.08	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00138	0.00136	1.013	-	-	1.12	-	2.15
		Iron_T	5	0.3	-	0.3	-	0.66	0.367	0.36	1.019	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.331	0.321	1.031	1.1	-	1.1	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.365	0.354	1.031	1.22	-	1.22	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000413	0.00039	1.060	-	-	-	-	2.07
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000343	0.00031	1.107	-	-	-	-	1.72
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.00039	0.00035	1.114	-	-	-	-	1.95
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000714	0.00068	1.050	-	-	-	-	3.57
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000321	0.00028	1.148	-	-	-	-	1.61
		Iron_T	5	0.3	-	0.3	-	0.57	0.37	0.363	1.019	1.23	-	1.23	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.335	0.325	1.030	1.12	-	1.12	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.317	0.305	1.040	1.06	-	1.06	-	-

Notes:
Comparisons of predicted results to baseline values and guidelines are based on values rounded to three significant figures.
CCME = Canadian Council of Ministers of the Environment (i.e., long-term and short-term Canadian Water Quality Guidelines for the Protection of Aquatic Life; CWQG-FAL)
MWQG = Manitoba Water Quality Guidelines (i.e., long-term and short-term Tier II and Tier III Manitoba Water Quality Standards, Objectives and Guidelines)
FEQG = Federal Environmetal Quality Guidelines (ECCC)
Parameters ending with _T denote total concentrations; _D denotes dissolved concentrations
Results shown here include identified POPCs in the Hughes River receiving environment sites (AQF40, AQF42, AQF43, AQF44, AQF45) from May to October.
POPC = parameter of potential concern (identified as a predicted value above baseline and a water quality guideline)

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Table NO2-01-02-20: Predicted Parameters of Potential Concern; Base Pump Rate, 90th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
base_90thFlow_10thPit	AQF40	Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000321	0.00032	1.004	-	-	-	-	1.15
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000312	0.00031	1.006	-	-	-	-	1.12
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000302	0.0003	1.006	-	-	-	-	1.08
		Iron_T	5	0.3	-	0.3	-	0.6	0.314	0.311	1.009	1.05	-	1.05	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.346	0.342	1.011	1.15	-	1.15	-	-
	AQF42	Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000421	0.00042	1.002	-	-	-	-	1.1
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000451	0.00045	1.002	-	-	-	-	1.18
		Iron_T	5	0.3	-	0.3	-	0.64	0.487	0.485	1.004	1.62	-	1.62	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.365	0.361	1.010	1.22	-	1.22	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.356	0.354	1.007	1.19	-	1.19	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.318	0.314	1.012	1.06	-	1.06	-	-
	AQF44	Iron_T	5	0.3	-	0.3	-	0.66	0.362	0.36	1.007	1.21	-	1.21	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.325	0.321	1.012	1.08	-	1.08	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.36	0.354	1.017	1.2	-	1.2	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000391	0.00039	1.001	-	-	-	-	1.95
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000311	0.00031	1.004	-	-	-	-	1.56
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000351	0.00035	1.004	-	-	-	-	1.76
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000282	0.00028	1.008	-	-	-	-	1.41
		Iron_T	5	0.3	-	0.3	-	0.57	0.365	0.363	1.007	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.329	0.325	1.012	1.1	-	1.1	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.31	0.305	1.017	1.03	-	1.03	-	-
base_90thFlow_medianPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000564	0.00056	1.008	-	-	-	-	2.02
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000328	0.00032	1.024	-	-	-	-	1.17
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.00032	0.00031	1.033	-	-	-	-	1.15
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.00031	0.0003	1.034	-	-	-	-	1.11
		Iron_T	5	0.3	-	0.3	-	0.6	0.314	0.311	1.009	1.05	-	1.05	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.346	0.342	1.011	1.15	-	1.15	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.000694	0.00069	1.006	-	-	-	-	1.82
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000429	0.00042	1.022	-	-	-	-	1.13
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000462	0.00045	1.026	-	-	-	-	1.21
		Iron_T	5	0.3	-	0.3	-	0.64	0.487	0.485	1.004	1.62	-	1.62	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.365	0.361	1.010	1.22	-	1.22	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.357	0.354	1.007	1.19	-	1.19	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.318	0.314	1.012	1.06	-	1.06	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00136	0.00136	1.001	-	-	1.11	-	2.12
		Iron_T	5	0.3	-	0.3	-	0.66	0.362	0.36	1.007	1.21	-	1.21	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.325	0.321	1.012	1.08	-	1.08	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.36	0.354	1.017	1.2	-	1.2	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000395	0.00039	1.013	-	-	-	-	1.98
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000318	0.00031	1.025	-	-	-	-	1.59
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.00036	0.00035	1.029	-	-	-	-	1.8
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000687	0.00068	1.011	-	-	-	-	3.44
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000291	0.00028	1.040	-	-	-	-	1.46
		Iron_T	5	0.3	-	0.3	-	0.57	0.365	0.363	1.007	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.329	0.325	1.012	1.1	-	1.1	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.31	0.305	1.017	1.03	-	1.03	-	-

Table NO2-01-02-20: Predicted Parameters of Potential Concern; Base Pump Rate, 90th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
base_90thFlow_90thPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000568	0.00056	1.014	-	-	-	-	2.04
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000333	0.00032	1.041	-	-	-	-	1.19
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000328	0.00031	1.057	-	-	-	-	1.17
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000318	0.0003	1.058	-	-	-	-	1.14
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00159	0.00158	1.006	-	-	1.2	-	5.7
		Iron_T	5	0.3	-	0.3	-	0.6	0.314	0.311	1.009	1.05	-	1.05	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.346	0.342	1.011	1.15	-	1.15	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.000698	0.00069	1.011	-	-	-	-	1.83
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000437	0.00042	1.040	-	-	-	-	1.15
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000471	0.00045	1.046	-	-	-	-	1.24
		Iron_T	5	0.3	-	0.3	-	0.64	0.487	0.485	1.004	1.62	-	1.62	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.365	0.361	1.010	1.22	-	1.22	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.357	0.354	1.007	1.19	-	1.19	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.318	0.314	1.013	1.06	-	1.06	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00137	0.00136	1.005	-	-	1.11	-	2.13
		Iron_T	5	0.3	-	0.3	-	0.66	0.363	0.36	1.007	1.21	-	1.21	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.325	0.321	1.012	1.08	-	1.08	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.36	0.354	1.018	1.2	-	1.2	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000399	0.00039	1.022	-	-	-	-	1.99
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000323	0.00031	1.042	-	-	-	-	1.62
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000367	0.00035	1.049	-	-	-	-	1.84
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000695	0.00068	1.022	-	-	-	-	3.47
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000299	0.00028	1.068	-	-	-	-	1.5
		Iron_T	5	0.3	-	0.3	-	0.57	0.366	0.363	1.007	1.22	-	1.22	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.329	0.325	1.012	1.1	-	1.1	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.31	0.305	1.017	1.03	-	1.03	-	-

Notes:
Comparisons of predicted results to baseline values and guidelines are based on values rounded to three significant figures.
CCME = Canadian Council of Ministers of the Environment (i.e., long-term and short-term Canadian Water Quality Guidelines for the Protection of Aquatic Life; CWQG-FAL)
MWQG = Manitoba Water Quality Guidelines (i.e., long-term and short-term Tier II and Tier III Manitoba Water Quality Standards, Objectives and Guidelines)
FEQG = Federal Environmetal Quality Guidelines (ECCC)
Parameters ending with _T denote total concentrations; _D denotes dissolved concentrations
Results shown here include identified POPCs in the Hughes River receiving environment sites (AQF40, AQF42, AQF43, AQF44, AQF45) from May to October.
POPC = parameter of potential concern (identified as a predicted value above baseline and a water quality guideline)

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Table NO2-01-02-21: Predicted Parameters of Potential Concern; Mixing Zone, 25% of 10th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
mixzone_10thFlow_10thPit	AQF40	Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000338	0.00032	1.06	-	-	-	-	1.21
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.00033	0.00031	1.06	-	-	-	-	1.18
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000321	0.0003	1.07	-	-	-	-	1.15
		Iron_T	5	0.3	-	0.3	-	0.6	0.362	0.311	1.16	1.21	-	1.21	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.396	0.342	1.16	1.32	-	1.32	-	-
		Iron_T	10	0.3	-	0.3	-	0.6	0.321	0.262	1.22	1.07	-	1.07	-	-
	AQF42	Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000431	0.00042	1.03	-	-	-	-	1.13
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000457	0.00045	1.02	-	-	-	-	1.2
		Iron_T	5	0.3	-	0.3	-	0.64	0.523	0.485	1.08	1.74	-	1.74	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.413	0.361	1.14	1.38	-	1.38	-	-
		Iron_T	7	0.3	-	0.3	-	0.64	0.312	0.247	1.26	1.04	-	1.04	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.402	0.354	1.14	1.34	-	1.34	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.37	0.314	1.18	1.23	-	1.23	-	-
		Iron_T	7	0.3	-	0.3	-	0.66	0.315	0.25	1.26	1.05	-	1.05	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.318	0.259	1.23	1.06	-	1.06	-	-
	AQF44	Iron_T	5	0.3	-	0.3	-	0.66	0.407	0.36	1.13	1.36	-	1.36	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.376	0.321	1.17	1.25	-	1.25	-	-
		Iron_T	7	0.3	-	0.3	-	0.66	0.328	0.265	1.24	1.09	-	1.09	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.405	0.354	1.14	1.35	-	1.35	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000401	0.00039	1.03	-	-	-	-	2.01
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000329	0.00031	1.06	-	-	-	-	1.64
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000367	0.00035	1.05	-	-	-	-	1.83
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000303	0.00028	1.08	-	-	-	-	1.51
		Iron_T	5	0.3	-	0.3	-	0.57	0.41	0.363	1.13	1.37	-	1.37	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.38	0.325	1.17	1.27	-	1.27	-	-
		Iron_T	7	0.3	-	0.3	-	0.57	0.329	0.266	1.24	1.1	-	1.1	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.366	0.305	1.20	1.22	-	1.22	-	-

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Table NO2-01-02-21: Predicted Parameters of Potential Concern; Mixing Zone, 25% of 10th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
mixzone_10thFlow_medianPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000644	0.00056	1.15	-	-	-	-	2.31
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000432	0.00032	1.35	-	-	-	-	1.55
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000429	0.00031	1.38	-	-	-	-	1.54
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000421	0.0003	1.40	-	-	-	-	1.51
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00159	0.00158	1.00	-	-	1.19	-	5.69
		Iron_T	5	0.3	-	0.3	-	0.6	0.363	0.311	1.17	1.21	-	1.21	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.396	0.342	1.16	1.32	-	1.32	-	-
		Iron_T	10	0.3	-	0.3	-	0.6	0.321	0.262	1.23	1.07	-	1.07	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.000764	0.00069	1.11	-	-	-	-	2.01
		Copper_D	6	-	-	0.00118	0.00144	0.000381	0.000441	0.00033	1.34	-	-	-	-	1.16
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000531	0.00042	1.26	-	-	-	-	1.39
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000549	0.00045	1.22	-	-	-	-	1.44
		Iron_T	5	0.3	-	0.3	-	0.64	0.524	0.485	1.08	1.75	-	1.75	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.414	0.361	1.15	1.38	-	1.38	-	-
		Iron_T	7	0.3	-	0.3	-	0.64	0.313	0.247	1.27	1.04	-	1.04	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.402	0.354	1.14	1.34	-	1.34	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.37	0.314	1.18	1.23	-	1.23	-	-
		Iron_T	7	0.3	-	0.3	-	0.66	0.315	0.25	1.26	1.05	-	1.05	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.319	0.259	1.23	1.06	-	1.06	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00139	0.00136	1.02	-	-	1.13	-	2.16
		Iron_T	5	0.3	-	0.3	-	0.66	0.408	0.36	1.13	1.36	-	1.36	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.377	0.321	1.17	1.26	-	1.26	-	-
		Iron_T	7	0.3	-	0.3	-	0.66	0.329	0.265	1.24	1.1	-	1.1	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.406	0.354	1.15	1.35	-	1.35	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000487	0.00039	1.25	-	-	-	-	2.43
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000423	0.00031	1.36	-	-	-	-	2.11
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000466	0.00035	1.33	-	-	-	-	2.33
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000768	0.00068	1.13	-	-	-	-	3.84
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000402	0.00028	1.44	-	-	-	-	2.01
		Iron_T	5	0.3	-	0.3	-	0.57	0.411	0.363	1.13	1.37	-	1.37	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.381	0.325	1.17	1.27	-	1.27	-	-
		Iron_T	7	0.3	-	0.3	-	0.57	0.33	0.266	1.24	1.1	-	1.1	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.366	0.305	1.20	1.22	-	1.22	-	-

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Table NO2-01-02-21: Predicted Parameters of Potential Concern; Mixing Zone, 25% of 10th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
mixzone_10thFlow_90thPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000716	0.00056	1.28	-	-	-	-	2.57
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000511	0.00032	1.60	-	-	-	-	1.83
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000513	0.00031	1.65	-	-	-	-	1.84
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000506	0.0003	1.69	-	-	-	-	1.81
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00166	0.00158	1.05	-	-	1.25	1.02	5.97
		Iron_T	5	0.3	-	0.3	-	0.6	0.364	0.311	1.17	1.21	-	1.21	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.397	0.342	1.16	1.32	-	1.32	-	-
		Iron_T	10	0.3	-	0.3	-	0.6	0.323	0.262	1.23	1.08	-	1.08	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.000836	0.00069	1.21	-	-	-	-	2.19
		Copper_D	6	-	-	0.00118	0.00144	0.000381	0.00052	0.00033	1.58	-	-	-	-	1.36
		Copper_D	7	-	-	0.0012	0.00146	0.000381	0.000421	0.00021	2.01	-	-	-	-	1.11
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000615	0.00042	1.47	-	-	-	-	1.62
		Copper_D	9	-	-	0.00132	0.00162	0.000381	0.000422	0.00021	2.01	-	-	-	-	1.11
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000626	0.00045	1.39	-	-	-	-	1.64
		Iron_T	5	0.3	-	0.3	-	0.64	0.525	0.485	1.08	1.75	-	1.75	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.415	0.361	1.15	1.38	-	1.38	-	-
		Iron_T	7	0.3	-	0.3	-	0.64	0.314	0.247	1.27	1.05	-	1.05	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.404	0.354	1.14	1.35	-	1.35	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.372	0.314	1.18	1.24	-	1.24	-	-
		Iron_T	7	0.3	-	0.3	-	0.66	0.317	0.25	1.27	1.06	-	1.06	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.32	0.259	1.23	1.07	-	1.07	-	-
		Phosphorus_T	5	-	-	0.025	-		0.0311	0.031	1.00	-	-	1.24	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00147	0.00136	1.08	-	-	1.19	-	2.28
		Iron_T	5	0.3	-	0.3	-	0.66	0.409	0.36	1.14	1.36	-	1.36	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.378	0.321	1.18	1.26	-	1.26	-	-
		Iron_T	7	0.3	-	0.3	-	0.66	0.33	0.265	1.25	1.1	-	1.1	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.407	0.354	1.15	1.36	-	1.36	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000559	0.00039	1.43	-	-	-	-	2.79
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000502	0.00031	1.62	-	-	-	-	2.51
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000549	0.00035	1.57	-	-	-	-	2.75
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000853	0.00068	1.25	-	-	-	-	4.26
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000486	0.00028	1.74	-	-	-	-	2.43
		Copper_D	10	-	-	0.00146	0.00182	0.0002	0.00253	0.00252	1.00	-	-	1.73	1.39	12.6
		Iron_T	5	0.3	-	0.3	-	0.57	0.412	0.363	1.13	1.37	-	1.37	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.382	0.325	1.18	1.27	-	1.27	-	-
		Iron_T	7	0.3	-	0.3	-	0.57	0.331	0.266	1.25	1.1	-	1.1	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.368	0.305	1.21	1.23	-	1.23	-	-

Notes:
Comparisons of predicted results to baseline values and guidelines are based on values rounded to three significant figures.
CCME = Canadian Council of Ministers of the Environment (i.e., long-term and short-term Canadian Water Quality Guidelines for the Protection of Aquatic Life; CWQG-FAL)
MWQG = Manitoba Water Quality Guidelines (i.e., long-term and short-term Tier II and Tier III Manitoba Water Quality Standards, Objectives and Guidelines)
FEQG = Federal Environmetal Quality Guidelines (ECCC)
Parameters ending with _T denote total concentrations; _D denotes dissolved concentrations
Results shown here include identified POPCs in the Hughes River receiving environment sites (AQF40, AQF42, AQF43, AQF44, AQF45) from May to October.
POPC = parameter of potential concern (identified as a predicted value above baseline and a water quality guideline)

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Table NO2-01-02-22: Predicted Parameters of Potential Concern; Mixing Zone, 25% of 50th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
mixzone_medianFlow_10thPit	AQF40	Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000332	0.00032	1.038	-	-	-	-	1.19
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000325	0.00031	1.049	-	-	-	-	1.17
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000316	0.0003	1.053	-	-	-	-	1.13
		Iron_T	5	0.3	-	0.3	-	0.6	0.339	0.311	1.088	1.13	-	1.13	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.378	0.342	1.104	1.26	-	1.26	-	-
		Iron_T	10	0.3	-	0.3	-	0.6	0.309	0.262	1.178	1.03	-	1.03	-	-
	AQF42	Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000428	0.00042	1.019	-	-	-	-	1.12
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000456	0.00045	1.013	-	-	-	-	1.2
		Iron_T	5	0.3	-	0.3	-	0.64	0.505	0.485	1.042	1.68	-	1.68	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.396	0.361	1.096	1.32	-	1.32	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.38	0.354	1.073	1.27	-	1.27	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.351	0.314	1.118	1.17	-	1.17	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.306	0.259	1.181	1.02	-	1.02	-	-
	AQF44	Iron_T	5	0.3	-	0.3	-	0.66	0.386	0.36	1.071	1.29	-	1.29	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.358	0.321	1.114	1.19	-	1.19	-	-
		Iron_T	7	0.3	-	0.3	-	0.66	0.313	0.265	1.182	1.04	-	1.04	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.395	0.354	1.115	1.32	-	1.32	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000396	0.00039	1.016	-	-	-	-	1.98
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000323	0.00031	1.041	-	-	-	-	1.61
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000363	0.00035	1.036	-	-	-	-	1.81
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000297	0.00028	1.062	-	-	-	-	1.49
		Iron_T	5	0.3	-	0.3	-	0.57	0.388	0.363	1.070	1.29	-	1.29	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.362	0.325	1.112	1.21	-	1.21	-	-
		Iron_T	7	0.3	-	0.3	-	0.57	0.314	0.266	1.181	1.05	-	1.05	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.35	0.305	1.148	1.17	-	1.17	-	-

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Table NO2-01-02-22: Predicted Parameters of Potential Concern; Mixing Zone, 25% of 50th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
mixzone_medianFlow_medianPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000605	0.00056	1.081	-	-	-	-	2.17
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000394	0.00032	1.232	-	-	-	-	1.41
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000401	0.00031	1.293	-	-	-	-	1.44
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.00039	0.0003	1.301	-	-	-	-	1.4
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00159	0.00158	1.004	-	-	1.19	-	5.68
		Iron_T	5	0.3	-	0.3	-	0.6	0.339	0.311	1.089	1.13	-	1.13	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.378	0.342	1.105	1.26	-	1.26	-	-
		Iron_T	10	0.3	-	0.3	-	0.6	0.309	0.262	1.180	1.03	-	1.03	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.00073	0.00069	1.058	-	-	-	-	1.92
		Copper_D	6	-	-	0.00118	0.00144	0.000381	0.000404	0.00033	1.223	-	-	-	-	1.06
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000503	0.00042	1.197	-	-	-	-	1.32
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000528	0.00045	1.174	-	-	-	-	1.39
		Iron_T	5	0.3	-	0.3	-	0.64	0.506	0.485	1.043	1.69	-	1.69	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.396	0.361	1.097	1.32	-	1.32	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.38	0.354	1.074	1.27	-	1.27	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.352	0.314	1.119	1.17	-	1.17	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.306	0.259	1.183	1.02	-	1.02	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00138	0.00136	1.013	-	-	1.12	-	2.15
		Iron_T	5	0.3	-	0.3	-	0.66	0.386	0.36	1.072	1.29	-	1.29	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.358	0.321	1.116	1.19	-	1.19	-	-
		Iron_T	7	0.3	-	0.3	-	0.66	0.314	0.265	1.184	1.05	-	1.05	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.395	0.354	1.116	1.32	-	1.32	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000442	0.00039	1.133	-	-	-	-	2.21
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000385	0.00031	1.241	-	-	-	-	1.92
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000438	0.00035	1.252	-	-	-	-	2.19
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000745	0.00068	1.096	-	-	-	-	3.73
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000373	0.00028	1.333	-	-	-	-	1.87
		Iron_T	5	0.3	-	0.3	-	0.57	0.389	0.363	1.071	1.3	-	1.3	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.362	0.325	1.114	1.21	-	1.21	-	-
		Iron_T	7	0.3	-	0.3	-	0.57	0.315	0.266	1.183	1.05	-	1.05	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.351	0.305	1.150	1.17	-	1.17	-	-

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Table NO2-01-02-22: Predicted Parameters of Potential Concern; Mixing Zone, 25% of 50th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG (long-term)
mixzone_medianFlow_90thPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000644	0.00056	1.150	-	-	-	-	2.31
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000447	0.00032	1.396	-	-	-	-	1.6
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000465	0.00031	1.499	-	-	-	-	1.67
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000454	0.0003	1.512	-	-	-	-	1.63
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00165	0.00158	1.043	-	-	1.24	1	5.9
		Iron_T	5	0.3	-	0.3	-	0.6	0.339	0.311	1.092	1.13	-	1.13	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.379	0.342	1.108	1.26	-	1.26	-	-
		Iron_T	10	0.3	-	0.3	-	0.6	0.31	0.262	1.184	1.03	-	1.03	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.000769	0.00069	1.114	-	-	-	-	2.02
		Copper_D	6	-	-	0.00118	0.00144	0.000381	0.000456	0.00033	1.383	-	-	-	-	1.2
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000566	0.00042	1.347	-	-	-	-	1.48
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.00059	0.00045	1.310	-	-	-	-	1.55
		Iron_T	5	0.3	-	0.3	-	0.64	0.506	0.485	1.044	1.69	-	1.69	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.397	0.361	1.099	1.32	-	1.32	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.381	0.354	1.076	1.27	-	1.27	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.352	0.314	1.122	1.17	-	1.17	-	-
		Iron_T	7	0.3	-	0.3	-	0.66	0.301	0.25	1.204	1	-	1	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.307	0.259	1.187	1.02	-	1.02	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00143	0.00136	1.051	-	-	1.16	-	2.23
		Iron_T	5	0.3	-	0.3	-	0.66	0.386	0.36	1.074	1.29	-	1.29	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.359	0.321	1.118	1.2	-	1.2	-	-
		Iron_T	7	0.3	-	0.3	-	0.66	0.315	0.265	1.188	1.05	-	1.05	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.396	0.354	1.119	1.32	-	1.32	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000481	0.00039	1.233	-	-	-	-	2.4
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000437	0.00031	1.411	-	-	-	-	2.19
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000502	0.00035	1.434	-	-	-	-	2.51
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000809	0.00068	1.189	-	-	-	-	4.04
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000437	0.00028	1.562	-	-	-	-	2.19
		Copper_D	10	-	-	0.00146	0.00182	0.0002	0.00253	0.00252	1.003	-	-	1.73	1.39	12.6
		Iron_T	5	0.3	-	0.3	-	0.57	0.389	0.363	1.073	1.3	-	1.3	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.363	0.325	1.116	1.21	-	1.21	-	-
		Iron_T	7	0.3	-	0.3	-	0.57	0.316	0.266	1.187	1.05	-	1.05	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.352	0.305	1.153	1.17	-	1.17	-	-

Notes:
Comparisons of predicted results to baseline values and guidelines are based on values rounded to three significant figures.
CCME = Canadian Council of Ministers of the Environment (i.e., long-term and short-term Canadian Water Quality Guidelines for the Protection of Aquatic Life; CWQG-FAL)
MWQG = Manitoba Water Quality Guidelines (i.e., long-term and short-term Tier II and Tier III Manitoba Water Quality Standards, Objectives and Guidelines)
FEQG = Federal Environmetal Quality Guidelines (ECCC)
Parameters ending with _T denote total concentrations; _D denotes dissolved concentrations
Results shown here include identified POPCs in the Hughes River receiving environment sites (AQF40, AQF42, AQF43, AQF44, AQF45) from May to October.
POPC = parameter of potential concern (identified as a predicted value above baseline and a water quality guideline)

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Table NO2-01-02-23: Predicted Parameters of Potential Concern; Mixing Zone, 25% of 90th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG
mixzone_90thFlow_10thPit	AQF40	Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000325	0.00032	1.015	-	-	-	-	1.16
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000317	0.00031	1.022	-	-	-	-	1.14
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000307	0.0003	1.023	-	-	-	-	1.1
		Iron_T	5	0.3	-	0.3	-	0.6	0.321	0.311	1.034	1.07	-	1.07	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.356	0.342	1.042	1.19	-	1.19	-	-
	AQF42	Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000424	0.00042	1.008	-	-	-	-	1.11
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000453	0.00045	1.007	-	-	-	-	1.19
		Iron_T	5	0.3	-	0.3	-	0.64	0.493	0.485	1.016	1.64	-	1.64	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.375	0.361	1.039	1.25	-	1.25	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.364	0.354	1.028	1.21	-	1.21	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.329	0.314	1.048	1.1	-	1.1	-	-
	AQF44	Iron_T	5	0.3	-	0.3	-	0.66	0.37	0.36	1.027	1.23	-	1.23	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.336	0.321	1.046	1.12	-	1.12	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.378	0.354	1.067	1.26	-	1.26	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000392	0.00039	1.006	-	-	-	-	1.96
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000315	0.00031	1.016	-	-	-	-	1.58
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000356	0.00035	1.016	-	-	-	-	1.78
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000288	0.00028	1.029	-	-	-	-	1.44
		Iron_T	5	0.3	-	0.3	-	0.57	0.373	0.363	1.027	1.24	-	1.24	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.34	0.325	1.045	1.13	-	1.13	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.325	0.305	1.066	1.08	-	1.08	-	-

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Table NO2-01-02-23: Predicted Parameters of Potential Concern; Mixing Zone, 25% of 90th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG
mixzone_90thFlow_medianPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000577	0.00056	1.031	-	-	-	-	2.07
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.00035	0.00032	1.093	-	-	-	-	1.25
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.00035	0.00031	1.130	-	-	-	-	1.26
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.00034	0.0003	1.135	-	-	-	-	1.22
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00158	0.00158	1.002	-	-	1.19	-	5.68
		Iron_T	5	0.3	-	0.3	-	0.6	0.322	0.311	1.034	1.07	-	1.07	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.357	0.342	1.042	1.19	-	1.19	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.000705	0.00069	1.022	-	-	-	-	1.85
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000457	0.00042	1.088	-	-	-	-	1.2
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000495	0.00045	1.101	-	-	-	-	1.3
		Iron_T	5	0.3	-	0.3	-	0.64	0.493	0.485	1.016	1.64	-	1.64	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.375	0.361	1.039	1.25	-	1.25	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.364	0.354	1.028	1.21	-	1.21	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.329	0.314	1.048	1.1	-	1.1	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00137	0.00136	1.005	-	-	1.11	-	2.13
		Iron_T	5	0.3	-	0.3	-	0.66	0.37	0.36	1.027	1.23	-	1.23	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.336	0.321	1.047	1.12	-	1.12	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.378	0.354	1.067	1.26	-	1.26	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.00041	0.00039	1.051	-	-	-	-	2.05
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.00034	0.00031	1.097	-	-	-	-	1.7
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000389	0.00035	1.112	-	-	-	-	1.95
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000709	0.00068	1.043	-	-	-	-	3.55
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000324	0.00028	1.158	-	-	-	-	1.62
		Iron_T	5	0.3	-	0.3	-	0.57	0.373	0.363	1.027	1.24	-	1.24	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.34	0.325	1.046	1.13	-	1.13	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.325	0.305	1.067	1.08	-	1.08	-	-

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Table NO2-01-02-23: Predicted Parameters of Potential Concern; Mixing Zone, 25% of 90th Percentile Hughes River Flows

Scenario	Site	Parameter of Potential Concern	Month of POPC (May to October)	Water Quality Guideline (mg/L)					Predicted Value (mg/L)	Measured Baseline Value (mg/L)	Magnitude Change: Predicted vs. Baseline	Predicted Magnitude of Guideline Exceedance (x-fold)				
				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG				CCME (Long-term)	CCME (Short-term)	MWQG (Long-term)	MWQG (Short-term)	FEQG
mixzone_90thFlow_90thPit	AQF40	Copper_D	5	-	-	0.00142	0.00177	0.000279	0.000592	0.00056	1.057	-	-	-	-	2.12
		Copper_D	6	-	-	0.00126	0.00155	0.000279	0.000371	0.00032	1.160	-	-	-	-	1.33
		Copper_D	7	-	-	0.0012	0.00147	0.000279	0.000379	0.00031	1.222	-	-	-	-	1.36
		Copper_D	8	-	-	0.00123	0.0015	0.000279	0.000369	0.0003	1.229	-	-	-	-	1.32
		Copper_D	10	-	-	0.00133	0.00164	0.000279	0.00162	0.00158	1.025	-	-	1.22	-	5.8
		Iron_T	5	0.3	-	0.3	-	0.6	0.322	0.311	1.035	1.07	-	1.07	-	-
		Iron_T	6	0.3	-	0.3	-	0.6	0.357	0.342	1.043	1.19	-	1.19	-	-
	AQF42	Copper_D	5	-	-	0.00133	0.00164	0.000381	0.00072	0.00069	1.043	-	-	-	-	1.89
		Copper_D	8	-	-	0.00123	0.00151	0.000381	0.000485	0.00042	1.155	-	-	-	-	1.27
		Copper_D	10	-	-	0.00134	0.00165	0.000381	0.000531	0.00045	1.180	-	-	-	-	1.39
		Iron_T	5	0.3	-	0.3	-	0.64	0.493	0.485	1.017	1.64	-	1.64	-	-
		Iron_T	6	0.3	-	0.3	-	0.64	0.375	0.361	1.040	1.25	-	1.25	-	-
	AQF43	Iron_T	5	0.3	-	0.3	-	0.66	0.364	0.354	1.029	1.21	-	1.21	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.329	0.314	1.049	1.1	-	1.1	-	-
	AQF44	Copper_D	6	-	-	0.00123	0.00151	0.000642	0.00139	0.00136	1.021	-	-	1.13	-	2.16
		Iron_T	5	0.3	-	0.3	-	0.66	0.37	0.36	1.028	1.23	-	1.23	-	-
		Iron_T	6	0.3	-	0.3	-	0.66	0.336	0.321	1.048	1.12	-	1.12	-	-
		Iron_T	10	0.3	-	0.3	-	0.66	0.378	0.354	1.069	1.26	-	1.26	-	-
	AQF45	Copper_D	5	-	-	0.00146	0.00182	0.0002	0.000425	0.00039	1.089	-	-	-	-	2.12
		Copper_D	6	-	-	0.00127	0.00156	0.0002	0.000361	0.00031	1.166	-	-	-	-	1.81
		Copper_D	7	-	-	0.00127	0.00156	0.0002	0.000418	0.00035	1.193	-	-	-	-	2.09
		Copper_D	8	-	-	0.00137	0.00169	0.0002	0.000737	0.00068	1.084	-	-	-	-	3.69
		Copper_D	9	-	-	0.00148	0.00185	0.0002	0.000355	0.00028	1.267	-	-	-	-	1.77
		Copper_D	10	-	-	0.00146	0.00182	0.0002	0.00252	0.00252	1.002	-	-	1.73	1.39	12.6
		Iron_T	5	0.3	-	0.3	-	0.57	0.373	0.363	1.028	1.24	-	1.24	-	-
		Iron_T	6	0.3	-	0.3	-	0.57	0.34	0.325	1.047	1.13	-	1.13	-	-
		Iron_T	8	0.3	-	0.3	-	0.57	0.326	0.305	1.068	1.09	-	1.09	-	-

Notes:
Comparisons of predicted results to baseline values and guidelines are based on values rounded to three significant figures.
CCME = Canadian Council of Ministers of the Environment (i.e., long-term and short-term Canadian Water Quality Guidelines for the Protection of Aquatic Life; CWQG-FAL)
MWQG = Manitoba Water Quality Guidelines (i.e., long-term and short-term Tier II and Tier III Manitoba Water Quality Standards, Objectives and Guidelines)
FEQG = Federal Environmetal Quality Guidelines (ECCC)
Parameters ending with _T denote total concentrations; _D denotes dissolved concentrations
Results shown here include identified POPCs in the Hughes River receiving environment sites (AQF40, AQF42, AQF43, AQF44, AQF45) from May to October.
POPC = parameter of potential concern (identified as a predicted value above baseline and a water quality guideline)

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ATTACHMENT NOC-02-02

ATTACHMENT NOC-02-02-A

Quality Assurance and Quality Control (QA/QC) Evaluation of Surface Water Samples Collected from May 2022 to April 2023, Lynn Lake Gold Project

Quality Assurance and Quality Control for Water Quality

The quality assurance/quality control (QA/QC) samples for the May 2022 to April 2023 surface water sampling program, Lynn Lake Gold Project (LLGP), included 13 field blanks, 12 travel blanks, and 13 replicate (i.e., field duplicate) samples. These blanks and duplicates correspond to the entirety of the 2022/2023 QA/QC sampling program (which included surface water sampling within and surrounding the MacLellan and Gordon sites). Only one of the 13 duplicate samples was collected in Hughes River (AQF45), but the results for all QA/QC samples used for the 2022/2023 program (regardless of proximity to Hughes River) are reported herein to provide a complete QA/QC evaluation of the 2022/2023 surface water program.

Methods

Field blank samples were prepared in the field. A set of sample bottles were filled with deionized water that was provided from the laboratory (ALS Environmental, Winnipeg Manitoba). The field blank samples were then exposed to the sampling environment at sites for as long as it took to fill a normal sample bottle with a field water sample. Field blank samples were filtered and preserved, as required, following the same method as the water samples. Field blank samples were used to detect potential sample cross-contamination during collection, handling, shipping, and analyses. Sample analytical results were examined to identify detectable levels of the measured parameters. The analytical results for field and travel blanks are provided in Table NOC-02-02-A1 (field blanks) and Table NOC-02-02-A2 (travel blanks).

Duplicate samples were prepared by collecting a second separate sample from the same location as the parent sample. Replicate samples were prepared (i.e., filtered and preserved as required) and then submitted to the analytical laboratory along with the parent sample. These samples were used to measure within-site variability and the precision of field methods and laboratory analyses. The results of the analysis of these replicate samples and relative percent differences (RPDs) from the comparison of the parent sample to the duplicate sample for each parameter are presented in Table NOC-02-02-A3. The RPD was calculated as the absolute difference between the two measurements divided by the average of the measurements, as follows:

$$RPD = \frac{|result\ 1\ -\ result\ 2|}{(result\ 1 + result\ 2) \div 2}\ x\ 100$$

If the duplicate concentrations for a given parameter were both greater than five times the parameter's detection limit and the RPD remained below 20%, then the duplicate sample RPD result for the parameter was not expected to adversely affect data quality.

The RPD 'threshold' of 20% is commonly used as a data quality objective (DQO) in Canadian jurisdictions (Ontario MOE 2011; BC ENV 2013; CCME 2016). An RPD of more than 20% indicates a possible problem and an RPD of more than 50% indicates a definite problem, most likely from sample contamination or a lack of sample representativeness (BC MOE 2013). However, it is not unusual to find higher variability for the field duplicates for select parameters, especially if the water is turbid (i.e., total suspended sediments greater than 25 milligram per litre [mg/L]).

Results

The results of the field blanks, travel blanks, duplicate sample analyses (as RPDs), and the laboratory QA/QC evaluations are summarized below.

Field and Travel Blanks

Approximately 94% of field blank analyses were below detection limits (DLs). Parameters that exceeded the DL in one or more field blank samples include:

- total ammonia (4 samples), up to 3.3 times the DL
- nitrite (1 sample), 3.4 times the DL
- phosphorous (2 samples), up to 3.3 times the DL
- dissolved organic carbon (7 samples), up to 6 times the DL
- total organic carbon (3 samples), up to 2.3 times the DL
- aluminum, total (2 samples) and dissolved (1 sample), up to 5.3 times the DL
- barium, total (2 samples) and dissolved (8 samples), up to 38 times the DL
- calcium, total (1 sample), 1.3 times the DL
- chromium, total (5 samples) and dissolved (1sample), up to 1.9 times the DL
- copper, dissolved (9 samples), up to 9.9 times the DL
- iron, total and dissolved (1 sample each), up to 3.3 times the DL
- lead, dissolved (1 sample), 2 times the DL
- dissolved lithium (1 sample), 1.2 times the DL
- manganese, total and dissolved (2 samples each), up to 2.5 times the DL
- mercury, total (1 sample), 2.5 times the DL
- molybdenum, dissolved (1 sample), 1.3 times the DL
- sodium, total (3 samples) and dissolved (2 samples), up to 5 times the DL
- strontium, dissolved (1 sample), 1.2 times the DL
- tin, total (1 sample) and dissolved (3 samples), up to 1.5 times the DL
- zinc, dissolved zinc (5 samples), up to 2.7 times the DL
- hexavalent chromium, total (2 samples), up to 2.7 times the DL
- methylmercury, dissolved (3 samples), up to 6.5 times the DL

Approximately 97.5% of the travel blank analyses were below detection limits (DLs). Parameters that exceeded the DL in one or more travel blank samples include:

- total ammonia (8 samples), up to 15 times the DL
- nitrite (1 sample), 4.4 times the DL
- nitrogen, total kjeldahl (1 sample), 1.8 times the DL

- phosphorous (1 sample), 4 times the DL
- dissolved organic carbon (2 samples), up to 1.6 times the DL
- aluminum, total (1 sample) and dissolved (2 samples), up to 4.2 times the DL
- barium, total (1 sample) and dissolved (2 samples), up to 7.2 times the DL
- chromium, total (2 samples) and dissolved (1 sample), up to 2.4 times the DL
- copper, dissolved (1 sample), 1.2 times the DL
- manganese, total (1 sample), 1.7 times the DL
- nickel, total and dissolved (1 sample each), up to 1.1 times the DL
- zinc, dissolved (1 sample), 1.5 times the DL
- hexavalent chromium, total (1 sample), 1.2 times the DL

These results for the field and travel blanks indicate that some sample cross-contamination during collection, handling, shipping, and/or analyses may have occurred in the surface water samples. Therefore, consideration of the identified parameters above the DL in the field/travel blanks is warranted for the interpretation of the overall sample results (especially for parameters exceeding water quality standards). However, the overall quality of the surface water samples is considered acceptable given that over 95% of the field/travel blank analyses were below the DL.

Field Duplicates

In the May 2022 to April 2023 sampling program, 13 duplicate samples were collected for water quality laboratory analysis as part of the QA/QC program (Table NOC-02-02-A2). The data quality objective (DQO) for replicates (RPD ≤ 20%) was exceeded in 39 (3%) of 1319 RPD analyses. The duplicate sample collected in Hughes Rives (site AQF45, December 2022) met the DQO (RPD ≤ 20%) in all cases except for one instant of total nitrate and nitrite as N with; RPDs of 31%. Across all duplicates collected, an RPD of 50% was exceeded in seven instances, or 0.5% of RPD analyses.

Although the duplicate samples generally meet the DQO and suggest that the surface water samples are of acceptable quality overall, the relatively few cases where the DQO was exceeded may be indicative of some cross-contamination during collection or lack of sample representativeness, and warrant consideration when interpreting the sample results.

Laboratory Quality Assurance/Quality Control

Water samples were analyzed by ALS Environmental in Winnipeg, Manitoba. ALS Environmental is a Canadian Association for Laboratory Accreditation certified laboratory for the analyses conducted. Laboratory QA/QC included analysis of laboratory control samples, methods blanks, laboratory duplicates, and spiked samples to assess precision and accuracy of analytical methods. The laboratory Certificates of Analysis (COAs) are provided in Appendix A.

Generally, the collection and shipment of water quality samples associated with remote monitoring programs can result in frequent exceedances of the recommended hold time (i.e., the time between sampling and analysis) of some analytes. It is important to note that recommended hold times are generally conservative and are not intended to represent fixed limits for sample validation (ALS 2017).

However, hold times are considered best-practice to limit the potential for sample degradation due to mechanisms such as bacterial action, chemical reaction, and evaporative loss (ALS 2017; Appendix B).

Parameters that frequently exceeded the recommended analytical hold time by at least 50% included nitrate and nitrite, which have a recommended hold time of 3 days. On one occasion, total, free, and weak acid-dissociable (WAD) cyanides sampled at site AQM71 (i.e., stream KEE3-B1 at the MacLellan site) exceeded the recommended hold time of 14 days (the sample was collected on May 28, 2022; received by lab on June 2, 2022; analyzed on June 27, 2022). While a hold time above the recommendation increases the uncertainty of the test results, it does not necessarily indicate the results are compromised (ALS 2017; Appendix B).

References

ALS 2017. Hold Times: General Information & Interpretation of Exceedances. Information sheet prepared by ALS Canada Ltd., Burnaby, British Columbia.

BC ENV (British Columbia Ministry of Environment) 2013. British Columbia Field Sampling Manual. Available at: https://www2.gov.bc.ca/gov/content/environment/research-monitoring-reporting/monitoring/laboratory-standards-quality-assurance/bc-field-sampling-manual. Accessed November 2022.

CCME (Canadian Council of Ministers of the Environment). 2016. Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment. PN 1557. ISBN 978-1-77202-032-8 PDF.

Ontario MOE (Ministry of Environment). 2011. Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Laboratory Services Branch, MOE.

Table NOC-02-02-A1: Analytical Results of Field Blanks for the May 2022 to April 2023 Surface Water Sampling Program, Lynn Lake Gold Project

Parameter	Lowest Detection Limit	Units	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK
			31-May-2022	31-May-2022	25-Jun-2022	25-Jul-2022	23-AuC-2022	17-Sep-2022	29-Oct-2022	17-Nov-2022	13-Dec-2022	25-Jan-2023	01-Mar-2023	29-Mar-2023	18-Apr-2023
			L271181318	L2711833-8	L2719501-7	L2725589-18	L2730355-11	L2733754-11	L2738661-16	L2740826-17	L2743404-1	WP2301173-016	WP2302565-017	WP2303966-017	WP2305502-017
Physical Tests (Water)															
Alkalinity, Total (as CaCO3)	1.0	mg/L	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0
Hardness (as CaCO3)	0.20	mg/L	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.50	<0.50	-
Total Suspended Solids	1.0	mg/L	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acidity (as CaCO3)	2.0	mg/L	2.3	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.6	<2.0	<2.0	<2.0	<2.0	<2.0
Anions and Nutrients (Water)															
Ammonia, Total (as N)	0.010	mg/L	<0.010	<0.010	0.014	0.024	0.033	0.019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bicarbonate (HCO3)	1.2	mg/L	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	-	-	<1.0	-
Bromide (Br)	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.010
Carbonate (CO3)	0.60	mg/L	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	-	<0.50	<1.0	-
Chloride (Cl)	0.10	mg/L	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.50	<0.020	<0.10	<0.10
Fluoride (F)	0.020	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020
Hydroxide (OH)	0.34	mg/L	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	-	-	<1.0	-
Nitrate (as N)	0.0050	mg/L	<0.0050	<0.0050	<0.020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.020	<0.020	<0.020	<0.0050
Nitrate and Nitrite as N	0.0051	mg/L	<0.0051	<0.0051	<0.070	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0224	-	-	-
Nitrite (as N)	0.0010	mg/L	<0.0010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0034	<0.010	<0.010	<0.010	<0.0010
Total Kjeldahl Nitrogen	0.20	mg/L	<0.20	<0.0010	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.15	<0.15	<0.15	<0.15
Phosphorus (P)-Total	0.0010	mg/L	<0.0030	0.0033	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.020	<0.020	<0.020	<0.0020
Sulfate (SO4)	0.30	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Cyanides (Water)															
Cyanide, Weak Acid Diss	0.0010	mg/L	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0010
Cyanide, Total	0.0010	mg/L	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0010
Cyanide, Free	0.0010	mg/L	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0010
Organic / Inorganic Carbon (Water)															
Dissolved Organic Carbon	0.50	mg/L	<0.50	<0.50	0.93	1.25	0.56	1.28	<0.50	0.88	<0.50	2.78	<0.50	<0.50	0.8
Total Organic Carbon	0.50	mg/L	<0.50	-	<0.50	1.17	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	<0.50	0.57
Total Metals (Water)															
Aluminum (Al)-Total	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	0.0056	0.0060	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Antimony (Sb)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium (Ba)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00013	0.00081	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Beryllium (Be)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Total	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

Parameter	Lowest Detection Limit	Units	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK
			31-May-2022	31-May-2022	25-Jun-2022	25-Jul-2022	23-AuC-2022	17-Sep-2022	29-Oct-2022	17-Nov-2022	13-Dec-2022	25-Jan-2023	01-Mar-2023	29-Mar-2023	18-Apr-2023
			L271181318	L2711833-8	L2719501-7	L2725589-18	L2730355-11	L2733754-11	L2738661-16	L2740826-17	L2743404-1	WP2301173-016	WP2302565-017	WP2303966-017	WP2305502-017
Cadmium (Cd)-Total	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	0.050	mg/L	<0.050	0.066	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cesium (Cs)-Total	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Total	0.00010	mg/L	0.00013	<0.00010	<0.00010	0.00013	0.00011	0.00010	0.00019	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Total	0.010	mg/L	0.033	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lead (Pb)-Total	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Manganese (Mn)-Total	0.00010	mg/L	0.00024	<0.00010	<0.00010	<0.00010	0.00025	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury (Hg)-Total	0.0000050	mg/L	-	-	-	-	-	<0.0000050	-	<0.0000050	<0.0000050	<0.0000050	-	<0.0000050	-
Mercury (Hg)-Total (ultra-trace)	0.0000005	mg/L	<0.0000005	<0.0000005	<0.0000005	0.00000126	-	-	-	-	-	-	<0.0000005	-	-
Molybdenum (Mo)-Total	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel (Ni)-Total	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Total	0.030	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Total	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Rubidium (Rb)-Total	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Selenium (Se)-Total	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si)-Total	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Silver (Ag)-Total	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	0.050	mg/L	0.257	0.260	0.066	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Strontium (Sr)-Total	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Sulfur (S)-Total	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium (Te)-Total	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00015	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten (W)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium (V)-Total	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium (Zr)-Total	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Parameter	Lowest Detection Limit	Units	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK
			31-May-2022	31-May-2022	25-Jun-2022	25-Jul-2022	23-AuC-2022	17-Sep-2022	29-Oct-2022	17-Nov-2022	13-Dec-2022	25-Jan-2023	01-Mar-2023	29-Mar-2023	18-Apr-2023
			L271181318	L2711833-8	L2719501-7	L2725589-18	L2730355-11	L2733754-11	L2738661-16	L2740826-17	L2743404-1	WP2301173-016	WP2302565-017	WP2303966-017	WP2305502-017
Dissolved Metals (Water)															
Aluminum (Al)-Dissolved	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0053	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Antimony (Sb)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium (Ba)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	0.00057	0.00099	<0.00010	0.00082	<0.00010	<0.00010	0.00042	0.00029	0.00359	0.00227	0.00383
Beryllium (Be)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cesium (Cs)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00020	mg/L	0.00062	0.00099	<0.00020	<0.00020	<0.00020	0.00120	<0.00020	0.00197	0.00041	0.00031	0.00096	0.00195	0.00125
Iron (Fe)-Dissolved	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	<0.010
Lead (Pb)-Dissolved	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000104	<0.000050
Lithium (Li)-Dissolved	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Manganese (Mn)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00023	<0.00010	<0.00010	<0.00010	0.00012	<0.00010
Mercury (Hg)-Dissolved	0.0000050	mg/L	<0.0000050	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)-Dissolved (ultra-trace)	0.0000005	mg/L	<0.0000005	<0.0000005	<0.0000005	<0.0000005	-	-	-	-	-	-	<0.0000005	-	-
Molybdenum (Mo)-Dissolved	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000063	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel (Ni)-Dissolved	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Dissolved	0.030	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Rubidium (Rb)-Dissolved	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Selenium (Se)-Dissolved	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si)-Dissolved	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Silver (Ag)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	0.050	mg/L	0.233	0.255	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Strontium (Sr)-Dissolved	0.00010	mg/L	0.00012	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020
Sulfur (S)-Dissolved	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium (Te)-Dissolved	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00013	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	0.00011
Titanium (Ti)-Dissolved	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

Parameter	Lowest Detection Limit	Units	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK
			31-May-2022	31-May-2022	25-Jun-2022	25-Jul-2022	23-AuC-2022	17-Sep-2022	29-Oct-2022	17-Nov-2022	13-Dec-2022	25-Jan-2023	01-Mar-2023	29-Mar-2023	18-Apr-2023
			L271181318	L2711833-8	L2719501-7	L2725589-18	L2730355-11	L2733754-11	L2738661-16	L2740826-17	L2743404-1	WP2301173-016	WP2302565-017	WP2303966-017	WP2305502-017
Tungsten (W)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium (V)-Dissolved	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved	0.0010	mg/L	0.0011	<0.0010	0.0016	<0.0010	<0.0010	<0.0010	<0.0010	0.0027	<0.0010	<0.0010	0.0013	0.0013	<0.0010
Zirconium (Zr)-Dissolved	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00030	<0.00030	<0.00030	<0.00030
Speciated Metals (Water)															
Chromium, Hexavalent	0.00050	mg/L	<0.00050	-	0.00135	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	-	-	-	-
Methylmercury (as MeHg)-Dissolved	0.000000020	mg/L	-	-	0.000000129	0.000000052	-	-	-	-	-	-	0.00000004	-	-
Methylmercury (as MeHg)-Total	0.000000020	mg/L	<0.000000020	-	<0.000000020	<0.000000020	-	-	-	-	-	-	<0.000020	-	-
Chromium, hexavalent [Cr VI], total	0.0000005	mg/L	-	-	-	-	-	-	-	-	-	0.00000069	<0.00000050	<0.00000050	<0.00000050

Notes:

Shaded cells = values above the detection limit

Values denoted with "<" indicate the detection limit and that the analytical result was below the detection limit

Table NOC-02-02-A2: Analytical Results of Travel Blanks for the May 2022 to April 2023 Surface Water Sampling Program, Lynn Lake Gold Project

Parameter	Lowest Detection Limit	Units	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK
			28-May-2022	30-May-22	27-Jun-2022	25-Jul-2022	24-AuC-2022	19-Sep-2022	28-Oct-2022	13-Dec-2022	25-Jan-2023	01-Mar-2023	03-Apr-2023	18-Apr-2023
			L2711813-6	L2711833-9	L2719501-19	L2725589-19	L2730355-19	L2733754-18	L2738661-18	L2743404-4	WP2301173-017	WP2302565-018	WP2303966-018	WP2305502-016
Physical Tests (Water)														
Alkalinity, Total (as CaCO3)	1.0	mg/L	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0
Hardness (as CaCO3)	0.20	mg/L	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.50	<0.50	-
Total Suspended Solids	1.0	mg/L	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acidity (as CaCO3)	2.0	mg/L	<2.0	<1.0	<2.0	<2.0	<2.0	<2.0	2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Anions and Nutrients (Water)														
Ammonia, Total (as N)	0.010	mg/L	<0.010	<0.010	0.060	0.012	0.010	<0.010	0.011	0.149	<0.010	0.042	0.092	0.071
Bicarbonate (HCO3)	1.2	mg/L	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	-	-	<1.0	-
Bromide (Br)	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.010
Carbonate (CO3)	0.60	mg/L	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	-	<0.50	<1.0	-
Chloride (Cl)	0.10	mg/L	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10	<0.10	<0.10	<0.50	<0.020	<0.10	<0.10
Fluoride (F)	0.020	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020
Hydroxide (OH)	0.34	mg/L	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	-	-	<1.0	-
Nitrate (as N)	0.0050	mg/L	<0.0050	<0.0050	<0.020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.020	<0.020	<0.020	<0.0050
Nitrate and Nitrite as N	0.0051	mg/L	<0.0051	<0.0051	<0.070	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0224	-	-	-
Nitrite (as N)	0.0010	mg/L	<0.0010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	0.0044	<0.010	<0.010	<0.010	<0.0010
Total Kjeldahl Nitrogen	0.20	mg/L	<0.20	<0.0010	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.15	<0.15	0.35	<0.15
Phosphorus (P)-Total	0.0010	mg/L	<0.0010	0.0040	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.020	<0.020	<0.020	<0.0020
Sulfate (SO4)	0.30	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Cyanides (Water)														
Cyanide, Weak Acid Diss	0.0010	mg/L	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0010
Cyanide, Total	0.0010	mg/L	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0010
Cyanide, Free	0.0010	mg/L	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0010
Organic / Inorganic Carbon (Water)														
Dissolved Organic Carbon	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.79	0.76	<0.50	<0.50
Total Organic Carbon	0.50	mg/L	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Metals (Water)														
Aluminum (Al)-Total	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0058	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Antimony (Sb)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium (Ba)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00072	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Beryllium (Be)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Total	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

Parameter	Lowest Detection Limit	Units	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK
			28-May-2022	30-May-22	27-Jun-2022	25-Jul-2022	24-AuC-2022	19-Sep-2022	28-Oct-2022	13-Dec-2022	25-Jan-2023	01-Mar-2023	03-Apr-2023	18-Apr-2023
			L2711813-6	L2711833-9	L2719501-19	L2725589-19	L2730355-19	L2733754-18	L2738661-18	L2743404-4	WP2301173-017	WP2302565-018	WP2303966-018	WP2305502-016
Cadmium (Cd)-Total	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cesium (Cs)-Total	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	0.00014	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Total	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lead (Pb)-Total	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Manganese (Mn)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00017	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury (Hg)-Total	0.0000050	mg/L	-	-	-	-	-	<0.0000050	-	<0.0000050	<0.0000050	-	<0.0000050	-
Mercury (Hg)-Total (ultra-trace)	0.0000005	mg/L	-	<0.0000005	<0.0000005	<0.0000005	-	-	-	-	-	<0.0000005	-	-
Molybdenum (Mo)-Total	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel (Ni)-Total	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00057	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Total	0.030	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Total	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Rubidium (Rb)-Total	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Selenium (Se)-Total	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si)-Total	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Silver (Ag)-Total	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Strontium (Sr)-Total	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Sulfur (S)-Total	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium (Te)-Total	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten (W)-Total	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium (V)-Total	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium (Zr)-Total	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals (Water)														
Aluminum (Al)-Dissolved	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0042	0.0026	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Antimony (Sb)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Parameter	Lowest Detection Limit	Units	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK
			28-May-2022	30-May-22	27-Jun-2022	25-Jul-2022	24-AuC-2022	19-Sep-2022	28-Oct-2022	13-Dec-2022	25-Jan-2023	01-Mar-2023	03-Apr-2023	18-Apr-2023
			L2711813-6	L2711833-9	L2719501-19	L2725589-19	L2730355-19	L2733754-18	L2738661-18	L2743404-4	WP2301173-017	WP2302565-018	WP2303966-018	WP2305502-016
Arsenic (As)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium (Ba)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00021	0.00067	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Beryllium (Be)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cesium (Cs)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00024	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved	0.00020	mg/L	<0.00020	<0.00020	0.00024	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Iron (Fe)-Dissolved	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lead (Pb)-Dissolved	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved	0.0050	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Manganese (Mn)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury (Hg)-Dissolved	0.0000050	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)-Dissolved (ultra-trace)	0.0000005	mg/L	-	<0.0000005	<0.0000005	<0.0000005	-	-	-	-	-	<0.0000005	-	-
Molybdenum (Mo)-Dissolved	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel (Ni)-Dissolved	0.00050	mg/L	<0.00050	<0.00050	0.00055	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Dissolved	0.030	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Rubidium (Rb)-Dissolved	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Selenium (Se)-Dissolved	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si)-Dissolved	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Silver (Ag)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Strontium (Sr)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020	<0.00020
Sulfur (S)-Dissolved	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium (Te)-Dissolved	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten (W)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium (V)-Dissolved	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Parameter	Lowest Detection Limit	Units	TRAVEL BLANK 28-May-2022 L2711813-6	TRAVEL BLANK 30-May-22 L2711833-9	TRAVEL BLANK 27-Jun-2022 L2719501-19	TRAVEL BLANK 25-Jul-2022 L2725589-19	TRAVEL BLANK 24-AuC-2022 L2730355-19	TRAVEL BLANK 19-Sep-2022 L2733754-18	TRAVEL BLANK 28-Oct-2022 L2738661-18	TRAVEL BLANK 13-Dec-2022 L2743404-4	TRAVEL BLANK 25-Jan-2023 WP2301173-017	TRAVEL BLANK 01-Mar-2023 WP2302565-018	TRAVEL BLANK 03-Apr-2023 WP2303966-018	TRAVEL BLANK 18-Apr-2023 WP2305502-016
Zinc (Zn)-Dissolved	0.0010	mg/L	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zirconium (Zr)-Dissolved	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00030	<0.00030	<0.00030	<0.00030
Speciated Metals (Water)														
Chromium, Hexavalent	0.00050	mg/L	<0.00050	-	<0.00050	0.00061	<0.00050	<0.00050	<0.00050	<0.00050	-	-	-	-
Methylmercury (as MeHg)-Dissolved	0.000000020	mg/L	-	-	<0.000000020	<0.000000020	-	-	-	-	-	<0.000000020	-	-
Methylmercury (as MeHg)-Total	0.000000020	mg/L	-	-	<0.000000020	<0.000000020	-	-	-	-	-	<0.000020	-	-
Chromium, hexavalent [Cr VI], total	0.0000005	mg/L	-	-	-	-	-	-	-	-	<0.00000050	<0.00000050	<0.00000050	<0.00000050

Notes:

Shaded cells = values above the detection limit

Values denoted with "<" indicate the detection limit and that the analytical result was below the detection limit

Table NOC-02-02-A3:

Parameter	Lowest Detection Limit	Units	QC-01 5/28/22 L2711813-5	AQM74 5/28/22 L2711813-1	RPD	QC-01 5/30/22 L2711833-10	AQF6-0 5/30/22 L2711833-1	RPD	QC-01 6/27/22 L2719501-18	AQM28 6/27/22 L2719501-14	RPD	QC-01 7/24/22 L2725589-7	AQM73 7/24/22 L2725589-5	RPD	QC-01 8/23/22 L2730355-10	AQM73 8/23/22 L2730355-2	RPD	QC-01 9/17/22 L2733754-12	AQM28 9/17/22 L2733754-10	RPD	QC-01 10/28/22 L2738661-17	AQM29C 10/28/22 L2738661-5	RPD
Physical Tests (Water)																							
Alkalinity, Total (as CaCO3)	1.0	mg/L	10.7	9.7	**10%**	138	139	**1%**	8.6	9.0	**5%**	13.4	10.6	**23%**	15.7	17.3	**10%**	9.9	10.4	**5%**	7.7	7.8	**1%**
Hardness (as CaCO3)	0.20	mg/L	14.7	14.3	**3%**	-	-	**-**	18.2	18.2	**0%**	18	18.5	**3%**	21.4	20	**7%**	22.7	22.3	**2%**	9.69	10.1	**4%**
Total Suspended Solids	1.0	mg/L	3.4	2.0	**<5x DL**	1.5	1.0	**<5x DL**	3.0	5.0	**<5x DL**	2.1	1.4	**<5x DL**	3.1	2.5	**<5x DL**	3.3	3.4	**<5x DL**	2.1	1.8	**<5x DL**
Acidity (as CaCO3)	2.0	mg/L	4.2	4.1	**<5x DL**	-	-	**-**	<2.0	<2.0	**<5x DL**	9.3	9.1	**<5x DL**	11.4	11.3	**1%**	<2.0	<2.0	**<5x DL**	2.4	2.4	**<5x DL**
Anions and Nutrients (Water)																							
Ammonia, Total (as N)	0.010	mg/L	0.017	0.016	**<5x DL**	<0.010	<0.010	**<5x DL**	0.032	<0.010	**<5x DL**	0.028	0.032	**<5x DL**	0.041	0.064	**<5x DL**	0.021	0.014	**<5x DL**	<0.010	<0.010	**<5x DL**
Bicarbonate (HCO3)	1.2	mg/L	13.1	11.8	**10%**	169	169	**0%**	10.5	11	**5%**	16.3	12.9	**23%**	19.2	21.1	**9%**	12.1	12.7	**5%**	9.4	9.5	**1%**
Bromide (Br)	0.10	mg/L	<0.10	<0.10	**<5x DL**	<0.10	<0.10	**<5x DL**	<0.10	<0.10	**<5x DL**	<0.10	<0.10	**<5x DL**	<0.10	<0.10	**<5x DL**	<0.10	<0.10	**<5x DL**	<0.10	<0.10	**<5x DL**
Carbonate (CO3)	0.60	mg/L	<0.60	<0.60	**<5x DL**	<0.60	<0.60	**<5x DL**	<0.60	<0.60	**<5x DL**	<0.60	<0.60	**<5x DL**	<0.60	<0.60	**<5x DL**	<0.60	<0.60	**<5x DL**	<0.60	<0.60	**<5x DL**
Chloride (Cl)	0.10	mg/L	0.21	0.22	**<5x DL**	2.94	2.92	**1%**	0.72	0.65	**10%**	<0.10	<0.10	**<5x DL**	<0.10	<0.10	**<5x DL**	0.76	0.76	**0%**	0.38	0.38	**<5x DL**
Fluoride (F)	0.020	mg/L	0.037	0.042	**<5x DL**	0.088	0.088	**<5x DL**	0.049	0.048	**<5x DL**	0.051	0.054	**<5x DL**	0.055	0.053	**<5x DL**	0.059	0.062	**<5x DL**	0.052	0.052	**<5x DL**
Hydroxide (OH)	0.34	mg/L	<0.34	<0.34	**<5x DL**	<0.34	<0.34	**<5x DL**	<0.34	<0.34	**<5x DL**	<0.34	<0.34	**<5x DL**	<0.34	<0.34	**<5x DL**	<0.34	<0.34	**<5x DL**	<0.34	<0.34	**<5x DL**
Nitrate (as N)	0.0050	mg/L	<0.0050	<0.0050	**<5x DL**	0.112	0.111	**1%**	<0.020	<0.020	**<5x DL**	<0.0050	<0.0050	**<5x DL**	<0.0050	<0.0050	**<5x DL**	<0.0050	<0.0050	**<5x DL**	0.0060	0.0065	**<5x DL**
Nitrate and Nitrite as N	0.0051	mg/L	<0.0051	<0.0051	**<5x DL**	0.112	0.111	**1%**	<0.070	<0.070	**<5x DL**	<0.0051	<0.0051	**<5x DL**	<0.0051	<0.0051	**<5x DL**	<0.0051	<0.0051	**<5x DL**	0.006	0.0065	**<5x DL**
Nitrite (as N)	0.0010	mg/L	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**
Total Kjeldahl Nitrogen	0.20	mg/L	0.54	0.58	**<5x DL**	-	-	**-**	0.39	0.40	**<5x DL**	0.50	0.35	**<5x DL**	0.72	0.58	**<5x DL**	0.28	0.30	**<5x DL**	0.22	<0.20	**<5x DL**
Phosphorus (P)-Total	0.0010	mg/L	0.0405	0.0285	**35%**	0.0052	0.0076	**38%**	0.0181	0.0167	**8%**	0.0425	0.0333	**24%**	0.0412	0.0426	**3%**	0.0187	0.0189	**1%**	0.0159	0.0155	**3%**
Sulfate (SO4)	0.30	mg/L	0.32	0.32	**<5x DL**	116	115	**1%**	7.47	7.37	**1%**	<0.30	<0.30	**<5x DL**	<0.30	<0.30	**<5x DL**	10.2	10.2	**0%**	2.13	2.12	**0%**
Cyanides (Water)																							
Cyanide, Weak Acid Diss	0.0010	mg/L	<0.0010	<0.0010	**<5x DL**	-	-	**-**	<0.0010	<0.0010	**<5x DL**	<0.0050	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**
Cyanide, Total	0.0010	mg/L	<0.0010	<0.0010	**<5x DL**	-	-	**-**	<0.0010	<0.0010	**<5x DL**	0.0012	<0.0010	**<5x DL**	0.0011	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**
Cyanide, Free	0.0010	mg/L	<0.0010	<0.0010	**<5x DL**	-	-	**-**	<0.0010	<0.0010	**<5x DL**	<0.0050	<0.0010	**<5x DL**	<0.0010	0.0013	**<5x DL**	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**
Organic / Inorganic Carbon (Water)																							
Dissolved Organic Carbon	0.50	mg/L	20.0	20.6	**3%**	7.44	7.12	**4%**	11.4	11.3	**1%**	25.4	24.7	**3%**	28.3	28.0	**1%**	12.5	12.6	**1%**	8.66	8.51	**2%**
Total Organic Carbon	0.50	mg/L	22.2	20.3	**9%**	-	-	**-**	10.5	10.2	**3%**	25.4	24.6	**3%**	27.9	28.2	**1%**	12.5	12.6	**1%**	8.61	8.04	**7%**
Total Metals (Water)																							
Aluminum (Al)-Total	0.0030	mg/L	0.192	0.192	**0%**	0.0109	0.0142	**<5x DL**	0.192	0.171	**12%**	0.103	0.103	**0%**	0.0947	0.103	**8%**	0.232	0.217	**7%**	0.0589	0.0617	**5%**
Antimony (Sb)-Total	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Arsenic (As)-Total	0.00010	mg/L	0.00023	0.00024	**<5x DL**	0.00124	0.00130	**5%**	0.00024	0.00024	**<5x DL**	0.00054	0.00053	**2%**	0.00066	0.00068	**3%**	0.00027	0.00027	**<5x DL**	0.00016	0.00018	**<5x DL**
Barium (Ba)-Total	0.00010	mg/L	0.00748	0.00775	**4%**	0.0195	0.0195	**0%**	0.00775	0.00750	**3%**	0.00596	0.00603	**1%**	0.00720	0.00704	**2%**	0.00795	0.00837	**5%**	0.00577	0.00562	**3%**
Beryllium (Be)-Total	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Bismuth (Bi)-Total	0.000050	mg/L	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**
Boron (B)-Total	0.010	mg/L	<0.010	<0.010	**<5x DL**	0.025	0.028	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**
Cadmium (Cd)-Total	0.0000050	mg/L	<0.0000050	0.0000056	**<5x DL**	<0.0000050	<0.0000050	**<5x DL**	0.0000237	0.0000248	**<5x DL**	0.0000062	0.0000051	**<5x DL**	0.0000097	0.0000092	**<5x DL**	0.0000181	0.0000189	**<5x DL**	0.0000079	0.0000068	**<5x DL**
Calcium (Ca)-Total	0.050	mg/L	4.43	4.54	**2%**	58.5	59.7	**2%**	5.70	5.71	**0%**	5.70	4.82	**17%**	5.87	6.02	**3%**	6.52	6.52	**0%**	2.97	2.91	**2%**
Cesium (Cs)-Total	0.000010	mg/L	<0.000010	<0.000010	**<5x DL**	0.000193	0.000195	**1%**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	0.000011	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Chromium (Cr)-Total	0.00010	mg/L	0.00027	0.00027	**<5x DL**	<0.00010	<0.00010	**<5x DL**	0.00766	0.00033	**<5x DL**	0.00028	0.00024	**<5x DL**	0.00029	0.00030	**<5x DL**	0.00045	0.00040	**<5x DL**	0.00031	0.00014	**<5x DL**

Parameter	Lowest Detection Limit	Units	QC-01 5/28/22 L2711813-5	AQM74 5/28/22 L2711813-1	RPD	QC-01 5/30/22 L2711833-10	AQF6-0 5/30/22 L2711833-1	RPD	QC-01 6/27/22 L2719501-18	AQM28 6/27/22 L2719501-14	RPD	QC-01 7/24/22 L2725589-7	AQM73 7/24/22 L2725589-5	RPD	QC-01 8/23/22 L2730355-10	AQM73 8/23/22 L2730355-2	RPD	QC-01 9/17/22 L2733754-12	AQM28 9/17/22 L2733754-10	RPD	QC-01 10/28/22 L2738661-17	AQM29C 10/28/22 L2738661-5	RPD
Cobalt (Co)-Total	0.00010	mg/L	0.00022	0.00024	<5x DL	<0.00010	<0.00010	<5x DL	0.00105	0.00098	7%	0.00030	0.00029	<5x DL	0.00041	0.00041	<5x DL	0.00100	0.00092	8%	0.00018	0.00016	<5x DL
Copper (Cu)-Total	0.00050	mg/L	0.00060	0.00061	<5x DL	0.00052	0.00068	<5x DL	0.00516	0.00469	10%	<0.00050	<0.00050	<5x DL	<0.00050	<0.00050	<5x DL	0.00580	0.00558	4%	0.00126	0.00106	<5x DL
Iron (Fe)-Total	0.010	mg/L	0.593	0.627	6%	0.083	0.085	2%	1.07	0.849	23%	0.847	0.810	4%	1.07	1.09	2%	0.965	0.889	8%	0.304	0.294	3%
Lead (Pb)-Total	0.000050	mg/L	0.000086	0.000095	<5x DL	<0.000050	<0.000050	<5x DL	0.000103	0.000103	<5x DL	0.000059	<0.000050	<5x DL	0.000058	0.000060	<5x DL	0.000064	0.000061	<5x DL	<0.000050	<0.000050	<5x DL
Lithium (Li)-Total	0.0010	mg/L	<0.0010	0.0010	<5x DL	0.0030	0.0034	<5x DL	<0.0010	0.0015	<5x DL	0.0014	0.0012	<5x DL	0.0011	0.0012	<5x DL	0.0011	0.0011	<5x DL	0.0011	0.0011	<5x DL
Magnesium (Mg)-Total	0.0050	mg/L	0.929	0.945	2%	19.9	19.2	4%	1.20	1.18	2%	1.15	1.12	3%	1.04	1.11	7%	1.49	1.49	0%	0.775	0.764	1%
Manganese (Mn)-Total	0.00010	mg/L	0.0539	0.0607	12%	0.284	0.283	0%	0.0429	0.0380	12%	0.0578	0.0566	2%	0.0897	0.0922	3%	0.0458	0.0434	5%	0.0145	0.0142	2%
Mercury (Hg)-Total	0.0000050	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000050	<0.0000050	<5x DL	-	-	<5x DL
Mercury (Hg)-Total (UT)	0.0000005	mg/L	0.00000344	0.00000277	22%	0.00000127	0.00000072	<5x DL	0.00000199	0.00000205	<5x DL	0.00000121	0.00000179	<5x DL	-	-	-	-	-	-	0.00000079	0.00000079	<5x DL
Molybdenum (Mo)-Total	0.000050	mg/L	0.000373	0.000384	3%	0.000413	0.000524	24%	0.000789	0.000056	<5x DL	<0.000050	<0.000050	<5x DL	<0.000050	<0.000050	<5x DL	0.000071	0.000073	<5x DL	0.000057	<0.000050	<5x DL
Nickel (Ni)-Total	0.00050	mg/L	<0.00050	<0.00050	<5x DL	0.00052	0.00056	<5x DL	0.0615	0.0589	4%	0.00065	0.00062	<5x DL	0.00083	0.00083	<5x DL	0.0811	0.0797	2%	0.0117	0.0117	0%
Phosphorus (P)-Total	0.030	mg/L	<0.030	0.040	<5x DL	<0.030	<0.030	<5x DL	<0.030	<0.030	<5x DL	0.051	<0.030	<5x DL	0.050	0.035	<5x DL	<0.030	<0.030	<5x DL	<0.030	<0.030	<5x DL
Potassium (K)-Total	0.050	mg/L	0.540	0.545	1%	4.75	4.71	1%	0.700	0.703	0%	0.080	0.067	<5x DL	0.122	0.126	<5x DL	0.683	0.672	2%	0.532	0.514	3%
Rubidium (Rb)-Total	0.00020	mg/L	0.00083	0.00086	<5x DL	0.00373	0.00365	2%	0.00105	0.00096	<5x DL	<0.00020	<0.00020	<5x DL	<0.00020	<0.00020	<5x DL	0.00106	0.00096	<5x DL	0.00093	0.00093	<5x DL
Selenium (Se)-Total	0.000050	mg/L	<0.000050	0.000053	<5x DL	<0.000050	0.000052	<5x DL	<0.000050	<0.000050	<5x DL	<0.000050	<0.000050	<5x DL	0.000067	0.000060	<5x DL	<0.000050	0.000051	<5x DL	0.000051	<0.000050	<5x DL
Silicon (Si)-Total	0.10	mg/L	1.77	1.81	2%	3.85	3.90	1%	2.51	2.45	2%	3.89	3.79	3%	3.49	3.71	6%	2.71	2.61	4%	2.75	2.70	2%
Silver (Ag)-Total	0.000010	mg/L	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL
Sodium (Na)-Total	0.050	mg/L	0.788	0.803	2%	15.2	15.0	1%	1.26	1.23	2%	1.17	1.13	3%	1.23	1.62	27%	1.45	1.41	3%	1.14	1.11	3%
Strontium (Sr)-Total	0.00020	mg/L	0.0114	0.0112	2%	0.178	0.173	3%	0.0151	0.0156	3%	0.0132	0.0114	15%	0.0145	0.0146	1%	0.0196	0.0200	2%	0.0122	0.0117	4%
Sulfur (S)-Total	0.50	mg/L	<0.50	<0.50	<5x DL	37.9	38.5	2%	2.24	2.46	<5x DL	<0.50	<0.50	<5x DL	<0.50	<0.50	<5x DL	3.26	3.36	3%	0.88	0.57	<5x DL
Tellurium (Te)-Total	0.00020	mg/L	<0.00020	<0.00020	<5x DL	<0.00020	<0.00020	<5x DL	<0.00020	<0.00020	<5x DL	<0.00020	<0.00020	<5x DL	<0.00020	<0.00020	<5x DL	<0.00020	<0.00020	<5x DL	<0.00020	<0.00020	<5x DL
Thallium (Tl)-Total	0.000010	mg/L	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL
Thorium (Th)-Total	0.00010	mg/L	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL
Tin (Sn)-Total	0.00010	mg/L	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	0.00092	0.00021	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL
Titanium (Ti)-Total	0.00030	mg/L	0.00310	0.00297	4%	0.00048	0.00086	<5x DL	0.00183	0.00157	15%	0.00145	0.00126	<5x DL	0.00118	0.00130	<5x DL	0.00233	0.00177	27%	0.00102	0.00089	<5x DL
Tungsten (W)-Total	0.00010	mg/L	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL
Uranium (U)-Total	0.000010	mg/L	0.000029	0.000032	<5x DL	0.00233	0.00235	1%	0.000024	0.000028	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	0.000035	0.000030	<5x DL	0.000027	0.000023	<5x DL
Vanadium (V)-Total	0.00050	mg/L	0.00058	0.00057	<5x DL	<0.00050	<0.00050	<5x DL	0.00070	<0.00050	<5x DL	<0.00050	<0.00050	<5x DL	<0.00050	<0.00050	<5x DL	<0.00050	<0.00050	<5x DL	<0.00050	<0.00050	<5x DL
Zinc (Zn)-Total	0.0030	mg/L	<0.0030	0.0177	<5x DL	<0.0030	<0.0030	<5x DL	0.0151	0.0135	<5x DL	<0.0030	<0.0030	<5x DL	0.0094	0.0073	<5x DL	0.0133	0.0143	<5x DL	<0.0030	<0.0030	<5x DL
Zirconium (Zr)-Total	0.00020	mg/L	0.00027	0.00024	<5x DL	<0.00020	<0.00020	<5x DL	<0.00020	<0.00020	<5x DL	<0.00020	<0.00020	<5x DL	<0.00020	0.00042	<5x DL	<0.00020	<0.00020	<5x DL	<0.00020	<0.00020	<5x DL
Dissolved Metals (Water)																							
Aluminum (Al)-Dissolved	0.0010	mg/L	0.181	0.163	10%	0.0026	0.0037	<5x DL	0.126	0.127	1%	0.0913	0.0929	2%	0.0982	0.0931	5%	0.140	0.141	1%	0.0349	0.0291	18%
Antimony (Sb)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL
Arsenic (As)-Dissolved	0.00010	mg/L	0.00021	0.00023	<5x DL	0.00117	0.00110	6%	0.00021	0.00021	<5x DL	0.00051	0.00052	2%	0.00060	0.00058	3%	0.00024	0.00024	<5x DL	0.00016	0.00015	<5x DL
Barium (Ba)-Dissolved	0.00010	mg/L	0.00719	0.00707	2%	0.0197	0.0200	2%	0.00717	0.00763	6%	0.00548	0.00575	5%	0.00719	0.00676	6%	0.00746	0.00881	17%	0.0124	0.00492	86%
Beryllium (Be)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL	<0.00010	<0.00010	<5x DL
Bismuth (Bi)-Dissolved	0.000050	mg/L	<0.000050	<0.000050	<5x DL	<0.000050	<0.000050	<5x DL	<0.000050	<0.000050	<5x DL	<0.000050	<0.000050	<5x DL	<0.000050	<0.000050	<5x DL	<0.000050	<0.000050	<5x DL	<0.000050	<0.000050	<5x DL
Boron (B)-Dissolved	0.010	mg/L	<0.010	<0.010	<5x DL	0.027	0.031	<5x DL	<0.010	<0.010	<5x DL	<0.010	<0.010	<5x DL	<0.010	<0.010	<5x DL	<0.010	<0.010	<5x DL	<0.010	<0.010	<5x DL
Cadmium (Cd)-Dissolved	0.0000050	mg/L	0.0000055	0.0000059	<5x DL	<0.0000050	<0.0000050	<5x DL	0.0000193	0.0000193	<5x DL	0.0000060	<0.0000050	<5x DL	0.0000065	0.0000078	<5x DL	0.0000157	0.0000262	<5x DL	<0.0000050	<0.0000050	<5x DL
Calcium (Ca)-Dissolved	0.050	mg/L	4.29	4.27	0%	56.0	62.0	10%	5.43	5.40	1%	5.56	5.63	1%	6.59	6.10	8%	6.65	6.62	0%	2.72	2.85	5%
Cesium (Cs)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	<5x DL	0.000206	0.000186	10%	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL	<0.000010	<0.000010	<5x DL
Chromium (Cr)-Dissolved	0.00010	mg/L	0.00027	0.00025	<5x DL	<0.00010	<0.00010	<5x DL	0.00019	0.00021	<5x DL	0.00022	0.00025	<5x DL	0.00026	0.00025	<5x DL	0.00020	0.00025	<5x DL	<0.00010	<0.00010	<5x DL

Parameter	Lowest Detection Limit	Units	QC-01 5/28/22 L2711813-5	AQM74 5/28/22 L2711813-1	RPD	QC-01 5/30/22 L2711833-10	AQF6-0 5/30/22 L2711833-1	RPD	QC-01 6/27/22 L2719501-18	AQM28 6/27/22 L2719501-14	RPD	QC-01 7/24/22 L2725589-7	AQM73 7/24/22 L2725589-5	RPD	QC-01 8/23/22 L2730355-10	AQM73 8/23/22 L2730355-2	RPD	QC-01 9/17/22 L2733754-12	AQM28 9/17/22 L2733754-10	RPD	QC-01 10/28/22 L2738661-17	AQM29C 10/28/22 L2738661-5	RPD
Cobalt (Co)-Dissolved	0.00010	mg/L	0.00021	0.00021	**<5x DL**	<0.00010	<0.00010	**<5x DL**	0.00056	0.00056	**0%**	0.00024	0.00028	**<5x DL**	0.00044	0.00042	**<5x DL**	0.00047	0.00061	**<5x DL**	0.00010	0.00010	**<5x DL**
Copper (Cu)-Dissolved	0.00020	mg/L	0.00068	0.00152	**<5x DL**	0.00071	0.00086	**<5x DL**	0.00367	0.00355	**3%**	0.00020	<0.00020	**<5x DL**	0.00058	0.00033	**<5x DL**	0.00460	0.00616	**29%**	0.00400	0.00087	**<5x DL**
Iron (Fe)-Dissolved	0.010	mg/L	0.515	0.545	**6%**	0.027	0.026	**<5x DL**	0.636	0.641	**1%**	0.698	0.733	**5%**	0.957	0.926	**3%**	0.621	0.568	**9%**	0.145	0.143	**1%**
Lead (Pb)-Dissolved	0.000050	mg/L	0.000071	0.000107	**<5x DL**	<0.000050	<0.000050	**<5x DL**	0.000074	0.000062	**<5x DL**	<0.000050	<0.000050	**<5x DL**	0.000057	0.000065	**<5x DL**	<0.000050	0.000142	**<5x DL**	0.000148	<0.000050	**<5x DL**
Lithium (Li)-Dissolved	0.0010	mg/L	<0.0010	<0.0010	**<5x DL**	0.0031	0.0039	**<5x DL**	<0.0010	<0.0010	**<5x DL**	0.0013	0.0015	**<5x DL**	0.0014	0.0013	**<5x DL**	0.0011	0.0011	**<5x DL**	<0.0010	<0.0010	**<5x DL**
Magnesium (Mg)-Dissolved	0.0050	mg/L	0.954	0.888	**7%**	18.7	20.2	**8%**	1.13	1.14	**1%**	1.01	1.08	**7%**	1.20	1.16	**3%**	1.48	1.41	**5%**	0.703	0.720	**2%**
Manganese (Mn)-Dissolved	0.00010	mg/L	0.0522	0.0490	**6%**	0.279	0.274	**2%**	0.0274	0.0269	**2%**	0.0527	0.0559	**6%**	0.0923	0.0927	**0%**	0.0245	0.0350	**35%**	0.00665	0.00675	**1%**
Mercury (Hg)-Dissolved	0.0000050	mg/L	<0.0000050	<0.0000050	**<5x DL**	-	-	**-**	-	-	**-**	-	-	**-**	-	-	**-**	-	-	**-**	0.00071	0.00057	**22%**
Mercury (Hg)-Dissolved (UT)	0.0000005	mg/L	0.00000252	0.00000263	**4%**	0.0000006	0.00000051	**<5x DL**	0.00000	0.00000	**<5x DL**	0.0000011	0.00000176	**<5x DL**	-	-	**-**	-	-	**-**	-	-	**-**
Molybdenum (Mo)-Dissolved	0.000050	mg/L	0.000352	0.000468	**28%**	0.000387	0.000399	**3%**	<0.000050	0.000072	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	0.000077	0.000094	**<5x DL**	0.000055	<0.000050	**<5x DL**
Nickel (Ni)-Dissolved	0.00050	mg/L	<0.00050	<0.00050	**<5x DL**	0.00052	<0.00050	**<5x DL**	0.0539	0.0538	**0%**	0.00060	0.00068	**<5x DL**	0.00066	0.00066	**<5x DL**	0.0748	0.0740	**1%**	0.0104	0.0106	**2%**
Phosphorus (P)-Dissolved	0.030	mg/L	<0.030	<0.030	**<5x DL**	<0.030	<0.030	**<5x DL**	<0.030	<0.030	**<5x DL**	<0.030	<0.030	**<5x DL**	<0.030	<0.030	**<5x DL**	<0.030	<0.030	**<5x DL**	<0.030	<0.030	**<5x DL**
Potassium (K)-Dissolved	0.050	mg/L	0.555	0.538	**3%**	5.15	5.13	**0%**	0.726	0.723	**0%**	0.070	0.075	**<5x DL**	0.127	0.113	**<5x DL**	0.694	0.652	**6%**	0.500	0.461	**8%**
Rubidium (Rb)-Dissolved	0.00020	mg/L	0.00083	0.00082	**<5x DL**	0.00404	0.00374	**8%**	0.00102	0.00097	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	0.00098	0.00098	**<5x DL**	0.00084	0.00083	**<5x DL**
Selenium (Se)-Dissolved	0.000050	mg/L	0.000054	<0.000050	**<5x DL**	0.000063	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	0.000077	0.000055	**<5x DL**	0.000073	0.000098	**<5x DL**	<0.000050	0.000056	**<5x DL**
Silicon (Si)-Dissolved	0.050	mg/L	1.77	1.56	**13%**	4.14	4.35	**5%**	2.45	2.46	**0%**	3.75	3.88	**3%**	3.84	3.86	**1%**	2.44	2.38	**2%**	2.50	2.46	**2%**
Silver (Ag)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Sodium (Na)-Dissolved	0.050	mg/L	0.824	0.791	**4%**	12.7	13.0	**2%**	1.16	1.22	**5%**	1.00	1.19	**17%**	1.11	1.17	**5%**	1.48	1.37	**8%**	0.992	0.995	**0%**
Strontium (Sr)-Dissolved	0.00010	mg/L	0.0108	0.0108	**0%**	0.171	0.174	**2%**	0.0152	0.0154	**1%**	0.0122	0.0134	**9%**	0.0156	0.0162	**4%**	0.0205	0.0197	**4%**	0.0117	0.0104	**12%**
Sulfur (S)-Dissolved	0.50	mg/L	<0.50	<0.50	**<5x DL**	38.3	42.2	**10%**	2.34	2.12	**<5x DL**	<0.50	0.69	**<5x DL**	<0.50	<0.50	**<5x DL**	2.93	2.90	**1%**	0.97	0.58	**<5x DL**
Tellurium (Te)-Dissolved	0.00020	mg/L	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**
Thallium (Tl)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Thorium (Th)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Tin (Sn)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	0.00045	0.00036	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Titanium (Ti)-Dissolved	0.00030	mg/L	0.00231	0.00248	**7%**	<0.00030	<0.00030	**<5x DL**	0.00071	0.00076	**<5x DL**	0.00080	0.00096	**<5x DL**	0.00110	0.00094	**<5x DL**	0.00091	0.00109	**<5x DL**	<0.00030	<0.00030	**<5x DL**
Tungsten (W)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Uranium (U)-Dissolved	0.000010	mg/L	0.000028	0.000027	**<5x DL**	0.00227	0.00219	**4%**	0.000022	0.000022	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	0.000027	0.000026	**<5x DL**	0.000018	0.000020	**<5x DL**
Vanadium (V)-Dissolved	0.00050	mg/L	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Zinc (Zn)-Dissolved	0.0010	mg/L	0.0015	0.0020	**<5x DL**	<0.0010	<0.0010	**<5x DL**	0.0125	0.0110	**13%**	0.0023	0.0034	**<5x DL**	0.0036	0.0036	**<5x DL**	0.0111	0.0171	**43%**	0.0045	0.0025	**<5x DL**
Zirconium (Zr)-Dissolved	0.00020	mg/L	0.00030	0.00028	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	0.00020	**<5x DL**	0.00021	0.00022	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**
Speciated Metals (Water)																							
Chromium, Hexavalent	0.0005	mg/L	0.00000	<0.00000050	**<5x DL**	-	-	**-**	<0.00050	0.00	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Methylmercury – Dissolved	0.00000002	mg/L	-	-	**-**	-	-	**-**	<0.000000020	0.00000008	**<5x DL**	0.000000	0.000000	**17%**	-	-	**-**	-	-	**-**	-	-	**-**
Methylmercury -Total	0.00000002	mg/L	0.000000188	0.000000253	**29%**	-	-	**-**	<0.000000020	0.00000006	**<5x DL**	0.000000	0.000000	**4%**	-	-	**-**	-	-	**-**	0.000000024	0.000000026	**<5x DL**
Chromium, hexavalent [Cr VI], total	0.0005	mg/L	-	-	**-**	-	-	**-**	-	-	**-**	-	-	**-**	-	-	**-**	-	-	**-**	-	-	**-**

Notes:

"RPD" = relative percent difference; calculated as: RPD = |result 1 – result2| / ((result 1 + result 2) ÷ 2) x 100

"<5x DL" = RPD not calculated due to reported concentrations being less than 5x the detection limit (DL)

Shaded cell = RPD > 20%

Table NOC-02-02-A3 (continued)

Parameter	Lowest Detection Limit	Units	QC-01	AQM28	RPD	QC-01	AQF45	RPD	QC-01	AQM28	RPD	QC-01	AQF7S	RPD	QC01	AQM29C	RPD	QC-01	AQF38	RPD
			11/16/22	11/16/22		12/13/22	12/13/22		24-Jan-2023	24-Jan-2023		28-Feb-2023	28-Feb-2023		28-Mar-2023	28-Mar-2023		18-Apr-2023	18-Apr-2023	
			L2740826-13	L2740826-1		L2743404-3	L2743404-2		WP2301173-006	WP2301173-001		WP2302565-011	WP2302565-006		WP2303966-010	WP2303966-002		WP2305502-015	WP2305502-014	
Physical Tests (Water)																				
Alkalinity, Total (as CaCO3)	1.0	mg/L	11.6	11.1	**4%**	12.1	11.9	**2%**	14.50	14.60	**1%**	20.1	17.1	**16%**	9.10	16.30	**57%**	84	84.5	**1%**
Hardness (as CaCO3)	0.20	mg/L	20.1	22.1	**9%**	13.3	13.5	**1%**	22.5	22.8	**1%**	19.60	20.1	**3%**	14.3	13.5	**6%**	-	-	**-**
Total Suspended Solids	1.0	mg/L	2.5	<1.0	**<5x DL**	1.4	1.4	**<5x DL**	<1.0	1.60	**<5x DL**	<1.0	<1.0	**<5x DL**	5.00	4.10	**<5x DL**	3.5	2.7	**<5x DL**
Acidity (as CaCO3)	2.0	mg/L	4.3	4.3	**<5x DL**	2.1	2.0	**<5x DL**	4.5	4.9	**<5x DL**	<2.0	<2.0	**<5x DL**	4.2	<2.0	**<5x DL**	3.7	3.1	**<5x DL**
Anions and Nutrients (Water)																				
Ammonia, Total (as N)	0.010	mg/L	<0.010	<0.010	**<5x DL**	0.024	0.015	**<5x DL**	0.09	0.069	**26%**	0.017	<0.010	**<5x DL**	0.032	0.027	**<5x DL**	0.056	0.051	**9%**
Bicarbonate (HCO3)	1.2	mg/L	14.2	13.5	**5%**	14.8	14.5	**2%**	-	-	**-**	-	-	**-**	11.1	19.9	**57%**	-	-	**-**
Bromide (Br)	0.10	mg/L	<0.10	<0.10	**<5x DL**	<0.10	<0.10	**<5x DL**	<0.10	<0.10	**<5x DL**	<0.10	<0.10	**<5x DL**	<0.10	<2.00	**<5x DL**	<0.010	<0.010	**<5x DL**
Carbonate (CO3)	0.60	mg/L	<0.60	<0.60	**<5x DL**	<0.60	<0.60	**<5x DL**	-	-	**-**	<0.50	<0.50	**<5x DL**	<1.0	<1.0	**<5x DL**	-	-	**-**
Chloride (Cl)	0.10	mg/L	0.85	1.32	**43%**	0.27	0.28	**<5x DL**	1.23	1	**21%**	0.05	0.049	**<5x DL**	2.97	<2.00	**<5x DL**	0.66	0.61	**8%**
Fluoride (F)	0.020	mg/L	0.053	0.054	**<5x DL**	0.067	0.070	**<5x DL**	0.06	0.06	**<5x DL**	-	-	**-**	0.08	<0.400	**<5x DL**	0.234	0.237	**1%**
Hydroxide (OH)	0.34	mg/L	<0.34	<0.34	**<5x DL**	<0.34	<0.34	**<5x DL**	-	-	**-**	-	-	**-**	<1.0	<1.0	**<5x DL**	-	-	**-**
Nitrate (as N)	0.0050	mg/L	0.0116	0.0106	**<5x DL**	0.0461	0.0409	**12%**	0.10	0.07	**35%**	0.08	0.078	**4%**	0.12	<0.400	**<5x DL**	0.0597	0.0588	**2%**
Nitrate and Nitrite as N	0.0051	mg/L	0.0116	0.0106	**<5x DL**	0.0557	0.0409	**31%**	0.1	0.07	**35%**	-	-	**-**	-	-	**-**	-	-	**-**
Nitrite (as N)	0.0010	mg/L	<0.0010	<0.0010	**<5x DL**	0.0096	<0.0010	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.010	<0.200	**<5x DL**	<0.0010	<0.0010	**<5x DL**
Total Kjeldahl Nitrogen	0.20	mg/L	0.22	0.35	**<5x DL**	0.23	0.31	**<5x DL**	0.45	0.44	**<5x DL**	0.35	0.29	**<5x DL**	0.28	0.41	**<5x DL**	1.4	1.32	**6%**
Phosphorus (P)-Total	0.0010	mg/L	0.0142	0.0161	**13%**	0.0139	0.0130	**7%**	0.022	0.021	**5%**	<0.020	<0.020	**<5x DL**	0.03	0.03	**16%**	0.02	0.0162	**21%**
Sulfate (SO4)	0.30	mg/L	8.79	8.94	**2%**	0.67	0.68	**<5x DL**	7.77	6.92	**12%**	1	1.27	**<5x DL**	1.77	<6.00	**<5x DL**	0.57	0.55	**<5x DL**
Cyanides (Water)																				
Cyanide, Weak Acid Diss	0.0010	mg/L	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**	<0.0050	<0.0050	**<5x DL**	<0.0050	<0.0050	**<5x DL**	<0.0050	<0.0050	**<5x DL**	<0.0010	<0.0010	**<5x DL**
Cyanide, Total	0.0010	mg/L	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**	<0.0050	<0.0050	**<5x DL**	<0.0050	<0.0050	**<5x DL**	<0.0050	<0.0050	**<5x DL**	<0.0010	<0.0010	**<5x DL**
Cyanide, Free	0.0010	mg/L	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**	<0.0050	<0.0050	**<5x DL**	<0.0050	<0.0050	**<5x DL**	<0.0050	<0.0050	**<5x DL**	0.001	<0.0010	**<5x DL**
Organic / Inorganic Carbon (Water)																				
Dissolved Organic Carbon	0.50	mg/L	13.5	11.8	**13%**	8.65	9.81	**13%**	13.1	12.6	**4%**	9.65	10.1	**5%**	8.71	9.4	**8%**	43.7	41	**6%**
Total Organic Carbon	0.50	mg/L	12.9	12.4	**4%**	9.98	9.52	**5%**	15.50	13.20	**16%**	10.10	12	**17%**	9.54	11.00	**14%**	41.4	40.4	**2%**
Total Metals (Water)																				
Aluminum (Al)-Total	0.0030	mg/L	0.173	0.179	**3%**	0.0628	0.0585	**7%**	0.139	0.138	**1%**	0.0208	0.0207	**0%**	0.0853	0.0607	**34%**	0.0393	0.036	**9%**
Antimony (Sb)-Total	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	0.00	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	0.00	0.00	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Arsenic (As)-Total	0.00010	mg/L	0.00025	0.00023	**<5x DL**	0.00024	0.00026	**<5x DL**	0.00033	0.00029	**<5x DL**	0.00026	0.00027	**<5x DL**	0.00054	0.00036	**<5x DL**	0.00088	0.0009	**2%**
Barium (Ba)-Total	0.00010	mg/L	0.00753	0.00779	**3%**	0.00817	0.00817	**0%**	0.01	0.01	**3%**	0.01	0.00871	**2%**	0.0125	0.0099	**23%**	0.0302	0.0307	**2%**
Beryllium (Be)-Total	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	0.000022	<0.000020	**<5x DL**	<0.000020	<0.000020	**<5x DL**	<0.000020	<0.000020	**<5x DL**	<0.000020	<0.000020	**<5x DL**
Bismuth (Bi)-Total	0.000050	mg/L	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	0.00	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**

ATTACHMENT NOC-02-02-A: QA/QC Evaluation, May 2022 to April 2023 Surface Water Sampling Program

Parameter	Lowest Detection Limit	Units	QC-01	AQM28	RPD	QC-01	AQF45	RPD	QC-01	AQM28	RPD	QC-01	AQF7S	RPD	QC01	AQM29C	RPD	QC-01	AQF38	RPD
			11/16/22	11/16/22		12/13/22	12/13/22		24-Jan-2023	24-Jan-2023		28-Feb-2023	28-Feb-2023		28-Mar-2023	28-Mar-2023		18-Apr-2023	18-Apr-2023	
			L2740826-13	L2740826-1		L2743404-3	L2743404-2		WP2301173-006	WP2301173-001		WP2302565-011	WP2302565-006		WP2303966-010	WP2303966-002		WP2305502-015	WP2305502-014	
Boron (B)-Total	0.010	mg/L	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**	0.017	0.016	**<5x DL**
Cadmium (Cd)-Total	0.0000050	mg/L	0.0000164	0.0000179	**<5x DL**	<0.0000050	<0.0000050	**<5x DL**	0.00	0.00	**<5x DL**	<0.0000050	<0.0000050	**<5x DL**	0.00	0.00	**<5x DL**	0.0000251	0.0000281	**11%**
Calcium (Ca)-Total	0.050	mg/L	6.20	6.02	**3%**	4.54	4.54	**0%**	7.26	7.22	**1%**	4.73	4.91	**4%**	3.94	3.72	**6%**	22.2	22.6	**2%**
Cesium (Cs)-Total	0.000010	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	0.00	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	0.00	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Chromium (Cr)-Total	0.00010	mg/L	0.00038	0.00037	**<5x DL**	0.00021	0.00022	**<5x DL**	0.00064	0.00082	**25%**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Cobalt (Co)-Total	0.00010	mg/L	0.00070	0.00079	**12%**	<0.00010	<0.00010	**<5x DL**	0.00	0.00	**<5x DL**	<0.00010	<0.00010	**<5x DL**	0.0016	0.0005	**104%**	<0.00010	<0.00010	**<5x DL**
Copper (Cu)-Total	0.00050	mg/L	0.00398	0.00396	**1%**	<0.00050	<0.00050	**<5x DL**	0.00351	0.00356	**1%**	<0.00050	<0.00050	**<5x DL**	0.00129	0.00102	**<5x DL**	0.00075	0.0007	**<5x DL**
Iron (Fe)-Total	0.010	mg/L	0.900	0.863	**4%**	0.271	0.262	**3%**	1.33	1.26	**5%**	0.05	0.054	**2%**	0.48	0.38	**24%**	0.179	0.181	**1%**
Lead (Pb)-Total	0.000050	mg/L	0.000060	0.000063	**<5x DL**	<0.000050	0.000060	**<5x DL**	0.000109	0.000079	**<5x DL**	<0.000050	<0.000050	**<5x DL**	0.00009	0.00006	**<5x DL**	0.000069	0.000057	**<5x DL**
Lithium (Li)-Total	0.0010	mg/L	0.0010	0.0012	**<5x DL**	0.0014	0.0014	**<5x DL**	0.00	0.00	**<5x DL**	<0.0010	<0.0010	**<5x DL**	0.00	0.00	**<5x DL**	0.0032	0.0031	**<5x DL**
Magnesium (Mg)-Total	0.0050	mg/L	1.45	1.41	**3%**	1.37	1.36	**1%**	1.55	1.58	**2%**	1.88	1.91	**2%**	1.09	1.03	**6%**	7.44	7.17	**4%**
Manganese (Mn)-Total	0.00010	mg/L	0.0294	0.0320	**8%**	0.0115	0.0113	**2%**	0.03	0.03	**1%**	0.00	0.00241	**4%**	0.11	0.05	**69%**	0.066	0.066	**0%**
Mercury (Hg)-Total	0.0000050	mg/L	<0.0000050	<0.0000050	**<5x DL**	<0.0000050	<0.0000050	**<5x DL**	<0.0000050	<0.0000050	**<5x DL**	-	-	**-**	<0.0000050	<0.0000050	**<5x DL**	-	-	**-**
Mercury (Hg)-Total (ultra-trace)	0.0000005	mg/L	-	-	**-**	-	-	**-**	-	-	**-**	0.00000074	0.00000076	**<5x DL**	-	-	**-**	-	-	**-**
Molybdenum (Mo)-Total	0.000050	mg/L	0.000069	0.000075	**<5x DL**	0.000091	0.000084	**<5x DL**	0.00	0.00	**<5x DL**	0.00	0.000076	**<5x DL**	0.00	0.00	**<5x DL**	0.00839	0.00853	**2%**
Nickel (Ni)-Total	0.00050	mg/L	0.0633	0.0622	**2%**	0.00061	<0.00050	**<5x DL**	0.0444	0.0443	**0%**	<0.00050	<0.00050	**<5x DL**	0.0078	0.00482	**47%**	0.00057	<0.00050	**<5x DL**
Phosphorus (P)-Total	0.030	mg/L	0.033	0.032	**<5x DL**	0.034	0.038	**<5x DL**	<0.050	<0.050	**<5x DL**	<0.050	<0.050	**<5x DL**	0.05	<0.050	**<5x DL**	<0.050	<0.050	**<5x DL**
Potassium (K)-Total	0.050	mg/L	0.789	0.757	**4%**	0.692	0.684	**1%**	0.918	0.856	**7%**	0.608	0.63	**4%**	0.855	0.78	**9%**	2.3	2.34	**2%**
Rubidium (Rb)-Total	0.00020	mg/L	0.00094	0.00095	**<5x DL**	0.00128	0.00131	**2%**	0.00	0.00	**<5x DL**	0.00	0.00112	**2%**	0.00	0.00	**4%**	0.00328	0.00346	**5%**
Selenium (Se)-Total	0.000050	mg/L	<0.000050	<0.000050	**<5x DL**	0.000060	0.000062	**<5x DL**	0.000085	0.000052	**<5x DL**	<0.000050	<0.000050	**<5x DL**	0.00008	<0.000050	**<5x DL**	0.000173	0.000219	**<5x DL**
Silicon (Si)-Total	0.10	mg/L	3.23	3.33	**3%**	3.42	3.43	**0%**	4.31	4.22	**2%**	1.17	1.15	**2%**	4.60	4.38	**5%**	4.21	4.18	**1%**
Silver (Ag)-Total	0.000010	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Sodium (Na)-Total	0.050	mg/L	1.53	1.51	**1%**	1.66	1.63	**2%**	2.68	1.81	**39%**	1.28	1.28	**0%**	1.65	5.62	**109%**	5.76	5.78	**0%**
Strontium (Sr)-Total	0.00020	mg/L	0.0191	0.0198	**4%**	0.0184	0.0179	**3%**	0.0225	0.0234	**4%**	0.0148	0.0152	**3%**	0.0174	0.0167	**4%**	0.0594	0.0605	**2%**
Sulfur (S)-Total	0.50	mg/L	3.18	3.38	**6%**	<0.50	<0.50	**<5x DL**	2.94	2.48	**<5x DL**	<0.50	<0.50	**<5x DL**	0.77	0.61	**<5x DL**	0.65	0.73	**<5x DL**
Tellurium (Te)-Total	0.00020	mg/L	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	0.00032	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**
Thallium (Tl)-Total	0.000010	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	0.00	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Thorium (Th)-Total	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Tin (Sn)-Total	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	0.00	0.00	**32%**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Titanium (Ti)-Total	0.00030	mg/L	0.00138	0.00156	**<5x DL**	0.00165	0.00168	**2%**	0.0018	0.00196	**9%**	<0.00030	<0.00030	**<5x DL**	0.00267	0.00224	**18%**	0.00127	0.00124	**<5x DL**
Tungsten (W)-Total	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Uranium (U)-Total	0.000010	mg/L	0.000025	0.000027	**<5x DL**	0.000041	0.000042	**<5x DL**	0.000028	0.000024	**<5x DL**	0.00001	<0.000010	**<5x DL**	0.000032	0.000028	**<5x DL**	0.000041	0.000041	**<5x DL**
Vanadium (V)-Total	0.00050	mg/L	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Zinc (Zn)-Total	0.0030	mg/L	0.0152	0.0152	**0%**	<0.0030	<0.0030	**<5x DL**	0.0132	0.0135	**<5x DL**	<0.0030	<0.0030	**<5x DL**	0.0122	0.0089	**<5x DL**	0.0055	0.0055	**<5x DL**
Zirconium (Zr)-Total	0.00020	mg/L	<0.00020	<0.00020	**<5x DL**	0.00024	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**

ATTACHMENT NOC-02-02-A: QA/QC Evaluation, May 2022 to April 2023 Surface Water Sampling Program

Parameter	Lowest Detection Limit	Units	QC-01	AQM28	RPD	QC-01	AQF45	RPD	QC-01	AQM28	RPD	QC-01	AQF7S	RPD	QC01	AQM29C	RPD	QC-01	AQF38	RPD
			11/16/22	11/16/22		12/13/22	12/13/22		24-Jan-2023	24-Jan-2023		28-Feb-2023	28-Feb-2023		28-Mar-2023	28-Mar-2023		18-Apr-2023	18-Apr-2023	
			L2740826-13	L2740826-1		L2743404-3	L2743404-2		WP2301173-006	WP2301173-001		WP2302565-011	WP2302565-006		WP2303966-010	WP2303966-002		WP2305502-015	WP2305502-014	
Dissolved Metals (Water)																				
Aluminum (Al)-Dissolved	0.0010	mg/L	0.120	0.126	**5%**	0.0193	0.0197	**2%**	0.0937	0.0947	**1%**	0.0183	0.019	**4%**	0.0177	0.0141	**23%**	0.0046	0.0041	**<5x DL**
Antimony (Sb)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Arsenic (As)-Dissolved	0.00010	mg/L	0.00021	0.00030	**<5x DL**	0.00016	0.00014	**<5x DL**	0.00023	0.00023	**<5x DL**	0.00022	0.00023	**<5x DL**	0.00062	0.00076	**20%**	0.00082	0.00077	**6%**
Barium (Ba)-Dissolved	0.00010	mg/L	0.00685	0.00706	**3%**	0.00573	0.00573	**0%**	0.01	0.01	**1%**	0.01	0.0086	**1%**	0.02	0.01	**96%**	0.028	0.0281	**0%**
Beryllium (Be)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.000020	<0.000020	**<5x DL**	<0.000020	<0.000020	**<5x DL**	<0.000020	<0.000020	**<5x DL**	<0.000020	<0.000020	**<5x DL**
Bismuth (Bi)-Dissolved	0.000050	mg/L	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**
Boron (B)-Dissolved	0.010	mg/L	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**	0.014	0.016	**<5x DL**
Cadmium (Cd)-Dissolved	0.0000050	mg/L	0.0000154	0.0000149	**<5x DL**	<0.0000050	<0.0000050	**<5x DL**	0.00	0.00	**<5x DL**	<0.0000050	<0.0000050	**<5x DL**	<0.0000050	0.00	**<5x DL**	0.0000263	0.0000209	**<5x DL**
Calcium (Ca)-Dissolved	0.050	mg/L	5.87	6.14	**4%**	3.59	3.66	**2%**	6.62	6.72	**1%**	4.79	4.7	**2%**	3.12	3.2	**3%**	20.5	22.3	**8%**
Cesium (Cs)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	**<5x DL**	0.000027	0.000030	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Chromium (Cr)-Dissolved	0.00010	mg/L	0.00015	0.00018	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Cobalt (Co)-Dissolved	0.00010	mg/L	0.00049	0.00053	**<5x DL**	<0.00010	<0.00010	**<5x DL**	0.00	0.00	**<5x DL**	<0.00010	<0.00010	**<5x DL**	0.00	0.00	**4%**	<0.00010	<0.00010	**<5x DL**
Copper (Cu)-Dissolved	0.00020	mg/L	0.00312	0.00327	**5%**	0.00025	0.00022	**<5x DL**	0.00254	0.0026	**2%**	<0.00020	0.00022	**<5x DL**	0.00382	0.00064	**<5x DL**	0.0006	0.0006	**<5x DL**
Iron (Fe)-Dissolved	0.010	mg/L	0.555	0.589	**6%**	0.125	0.126	**1%**	0.85	0.87	**3%**	0.04	0.044	**<5x DL**	0.18	0.19	**4%**	0.065	0.064	**2%**
Lead (Pb)-Dissolved	0.000050	mg/L	0.000051	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**	0.000055	0.000054	**<5x DL**	<0.000050	<0.000050	**<5x DL**	0.000077	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**
Lithium (Li)-Dissolved	0.0010	mg/L	<0.0010	0.0010	**<5x DL**	0.0018	0.0018	**<5x DL**	0.00	0.00	**<5x DL**	<0.0010	<0.0010	**<5x DL**	0.00	0.00	**<5x DL**	0.0031	0.0033	**<5x DL**
Magnesium (Mg)-Dissolved	0.0050	mg/L	1.31	1.63	**22%**	1.04	1.05	**1%**	1.44	1.46	**1%**	1.73	1.7	**2%**	0.833	0.85	**2%**	7.22	7.02	**3%**
Manganese (Mn)-Dissolved	0.00010	mg/L	0.0194	0.0201	**4%**	0.00362	0.00366	**1%**	0.02	0.02	**0%**	0.00	0.0019	**1%**	0.09	0.09	**2%**	0.0422	0.0405	**4%**
Mercury (Hg)-Dissolved	0.0000050	mg/L	-	-	**-**	-	-	**-**	-	-	**-**	-	-	**-**	-	-	**-**	-	-	**-**
Mercury (Hg)-Dissolved (ultra-trace)	0.0000005	mg/L	-	-	**-**	-	-	**-**	-	-	**-**	0.00000081	0.00000104	**<5x DL**	-	-	**-**	-	-	**-**
Molybdenum (Mo)-Dissolved	0.000050	mg/L	<0.000050	0.000078	**<5x DL**	0.000074	0.000082	**<5x DL**	0.000059	0.000066	**<5x DL**	0.00	0.000072	**<5x DL**	0.000052	<0.000050	**<5x DL**	0.00787	0.0083	**5%**
Nickel (Ni)-Dissolved	0.00050	mg/L	0.0571	0.0614	**7%**	<0.00050	<0.00050	**<5x DL**	0.04	0.04	**2%**	<0.00050	<0.00050	**<5x DL**	0.00	0.00	**8%**	<0.00050	<0.00050	**<5x DL**
Phosphorus (P)-Dissolved	0.030	mg/L	<0.030	<0.030	**<5x DL**	<0.030	<0.030	**<5x DL**	<0.050	<0.050	**<5x DL**	<0.050	<0.050	**<5x DL**	<0.050	<0.050	**<5x DL**	<0.050	<0.050	**<5x DL**
Potassium (K)-Dissolved	0.050	mg/L	0.667	0.672	**1%**	0.566	0.565	**0%**	0.81	0.80	**1%**	0.595	0.576	**3%**	0.65	0.66	**1%**	2.33	2.33	**0%**
Rubidium (Rb)-Dissolved	0.00020	mg/L	0.00095	0.00086	**<5x DL**	0.00098	0.00102	**<5x DL**	0.00098	0.00099	**<5x DL**	0.00	0.00112	**6%**	0.0011	0.00116	**5%**	0.00354	0.00339	**4%**
Selenium (Se)-Dissolved	0.000050	mg/L	<0.000050	0.000053	**<5x DL**	<0.000050	<0.000050	**<5x DL**	<0.000050	0.00	**<5x DL**	0.000051	0.000052	**<5x DL**	0.00	0.00	**<5x DL**	0.000105	0.000119	**<5x DL**
Silicon (Si)-Dissolved	0.050	mg/L	2.85	3.17	**11%**	2.59	2.61	**1%**	3.97	4.04	**2%**	1.09	1.08	**1%**	3.58	3.61	**1%**	3.72	3.7	**1%**
Silver (Ag)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Sodium (Na)-Dissolved	0.050	mg/L	1.29	1.57	**20%**	1.22	1.22	**0%**	1.7	1.7	**0%**	1.26	1.23	**2%**	1.31	1.34	**2%**	5.5	5.61	**2%**
Strontium (Sr)-Dissolved	0.00010	mg/L	0.0187	0.0176	**6%**	0.0147	0.0148	**1%**	0.02	0.02	**5%**	0.0146	0.0144	**1%**	0.01	0.02	**3%**	0.0595	0.0619	**4%**
Sulfur (S)-Dissolved	0.50	mg/L	2.73	3.35	**20%**	<0.50	<0.50	**<5x DL**	2.08	2.55	**<5x DL**	0.59	1.26	**<5x DL**	<0.50	0.52	**<5x DL**	0.91	0.69	**<5x DL**
Tellurium (Te)-Dissolved	0.00020	mg/L	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**
Thallium (Tl)-Dissolved	0.000010	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Thorium (Th)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Tin (Sn)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	0.00016	**<5x DL**	0.00016	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Titanium (Ti)-Dissolved	0.00030	mg/L	0.00059	0.00066	**<5x DL**	0.00032	0.00034	**<5x DL**	0.00	0.00	**<5x DL**	<0.00030	<0.00030	**<5x DL**	<0.00030	<0.00030	**<5x DL**	<0.00030	<0.00030	**<5x DL**
Tungsten (W)-Dissolved	0.00010	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Uranium (U)-Dissolved	0.000010	mg/L	0.000015	0.000020	**<5x DL**	0.000025	0.000023	**<5x DL**	0.00	0.00	**<5x DL**	0.00001	<0.000010	**<5x DL**	0.00	0.00	**<5x DL**	0.000036	0.000039	**<5x DL**

ATTACHMENT NOC-02-02-A: QA/QC Evaluation, May 2022 to April 2023 Surface Water Sampling Program

Parameter	Lowest Detection Limit	Units	QC-01	AQM28	RPD	QC-01	AQF45	RPD	QC-01	AQM28	RPD	QC-01	AQF7S	RPD	QC01	AQM29C	RPD	QC-01	AQF38	RPD
			11/16/22	11/16/22		12/13/22	12/13/22		24-Jan-2023	24-Jan-2023		28-Feb-2023	28-Feb-2023		28-Mar-2023	28-Mar-2023		18-Apr-2023	18-Apr-2023	
			L2740826-13	L2740826-1		L2743404-3	L2743404-2		WP2301173-006	WP2301173-001		WP2302565-011	WP2302565-006		WP2303966-010	WP2303966-002		WP2305502-015	WP2305502-014	
Vanadium (V)-Dissolved	0.00050	mg/L	<0.00050	0.00076	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Zinc (Zn)-Dissolved	0.0010	mg/L	0.0120	0.0139	**15%**	<0.0010	<0.0010	**<5x DL**	0.01	0.01	**7%**	0.0023	0.0025	**<5x DL**	0.01	0.00	**<5x DL**	0.0041	0.004	**<5x DL**
Zirconium (Zr)-Dissolved	0.00020	mg/L	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**	<0.00030	<0.00030	**<5x DL**	<0.00030	<0.00030	**<5x DL**	<0.00030	<0.00030	**<5x DL**	<0.00030	<0.00030	**<5x DL**
Speciated Metals (Water)																				
Chromium, Hexavalent	0.0005	mg/L	0.00	0.00	**<5x DL**	<0.00050	<0.00050	**<5x DL**	-	-	**-**	-	-	**-**	-	-	**-**	-	-	**-**
Methylmercury (as MeHg)-Dissolved	0.00000002	mg/L	-	-	**-**	-	-	**-**	-	-	**-**	0.00000004	0.000000094	**<5x DL**	-	-	**-**	-	-	**-**
Methylmercury (as MeHg)-Total	0.00000002	mg/L	-	-	**-**	-	-	**-**	-	-	**-**	0.000000038	0.000000063	**<5x DL**	-	-	**-**	-	-	**-**
Chromium, hexavalent [Cr VI], total	0.0005	mg/L	-	-	**-**	-	-	**-**	0.0000005	<0.00000050	**<5x DL**	<0.00050	<0.00050	**<5x DL**	<0.00000050	0.00000095	**<5x DL**	<0.00000050	<0.00000050	**<5x DL**

Notes:

"RPD" = relative percent difference; calculated as: RPD = |result 1 - result2| / ((result 1 + result 2) ÷ 2) x 100

"<5x DL" = RPD not calculated due to reported concentrations being less than 5x the detection limit (DL)

Shaded cell = RPD > 20%

Appendix A Certificates of Analysis

Laboratory Certificates of Analysis:

May 2022 to April 2023 Surface Water Sampling Program

The certificates of analysis (COAs) included in this attachment (Appendix A-1) correspond to the sampling months and years provided in Table A-1.1. These COAs are the analytical laboratory results of the complete surface water sampling program at the MacLellan and Gordon sites of the Lynn Lake Gold Project from May 2022 to April 2023.

Table A-1.1: List of Certificates of Analysis Provided in Appendix A

ALS Certificate of Analysis Number	Sampling Month and Year
L2711813	May 2022
L2711833	May 2022
L2719501	June 2022
L2725589	July 2022
L2730355	August 2022
L2733754	September 2022
L2735222	September 2022
L2738661	October 2022
L2740826	November 2022
L2743404	December 2022
WP2301173	January 2023
WP2302565	February 2023
WP2303966	March 2023
WP2305502	April 2023

Alamos Gold Inc.
ATTN: KAREN MATHERS
C/O Stantec Consulting
500 - 311 Portage Avenue
Winnipeg MB R3B 2B9

Date Received: 02-JUN-22
Report Date: 25-JUL-22 10:02 (MT)
Version: FINAL

Client Phone: 204-924-5735

Certificate of Analysis

Lab Work Order #: L2711813

Project P.O. #: NOT SUBMITTED
Job Reference: ALAMOS
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2711813-1 W 28-MAY-22 09:21 AQM74	L2711813-2 W 28-MAY-22 10:30 AQM73	L2711813-3 W 28-MAY-22 11:36 AQM71	L2711813-4 W 28-MAY-22 12:16 AQM72	L2711813-5 W 28-MAY-22 12:44 QC-01
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	14.3	10.8	30.4	4.46	14.7
	Total Suspended Solids (mg/L)	2.0	<1.0	5.8	3.6	3.4
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	4.1	4.3	2.4	49.4	4.2
	Alkalinity, Total (as CaCO3) (mg/L)	9.7	5.8	21.6	1.0	10.7
	Ammonia, Total (as N) (mg/L)	0.016	<0.010	0.013	0.015	0.017
	Bicarbonate (HCO3) (mg/L)	11.8	7.1	26.4	1.2	13.1
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	0.22	<0.10	0.51	<0.10	0.21
	Fluoride (F) (mg/L)	0.042	0.033	0.030	0.035	0.037
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	<0.0051	<0.0051	0.0089	<0.0051	<0.0051
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0089	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.58	0.44	0.42	0.46	0.54
	Phosphorus (P)-Total (mg/L)	0.0285	0.0222	0.0190	0.0230	0.0405
	Sulfate (SO4) (mg/L)	0.32	<0.30	8.60 PEHR	<0.30	0.32
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010 PEHR	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010 PEHR	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010 PEHR	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	20.6	20.9	15.6	23.7	20.0
	Total Organic Carbon (mg/L)	20.3	20.8	15.6	23.5	22.2
Total Metals	Aluminum (Al)-Total (mg/L)	0.192	0.0667	0.108	0.145	0.192
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00024	0.00032	0.00021	0.00028	0.00023
	Barium (Ba)-Total (mg/L)	0.00775	0.00327	0.00791	0.00434	0.00748
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.0000056	0.0000054	<0.0000050	0.0000091	<0.0000050
	Calcium (Ca)-Total (mg/L)	4.54	3.41	11.2	1.12	4.43
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	0.000012	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00027	0.00017	0.00022	0.00030	0.00027
	Cobalt (Co)-Total (mg/L)	0.00024	<0.00010	<0.00010	0.00021	0.00022
	Copper (Cu)-Total (mg/L)	0.00061	<0.00050	0.00056 RRV	0.00344	0.00060

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L2711813-6 Description: W Sampled Date: 28-MAY-22 Sampled Time: Client ID: TRIP BLANK	Sample ID: L2711813-7 Description: W Sampled Date: 29-MAY-22 Sampled Time: 09:42 Client ID: AQF41	Sample ID: L2711813-8 Description: W Sampled Date: 29-MAY-22 Sampled Time: 10:13 Client ID: AQF46	Sample ID: L2711813-9 Description: W Sampled Date: 29-MAY-22 Sampled Time: 11:13 Client ID: AQF7S	Sample ID: L2711813-10 Description: W Sampled Date: 29-MAY-22 Sampled Time: 11:33 Client ID: AQF7D
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	<0.20	10.7	18.9	16.6	16.1
	Total Suspended Solids (mg/L)	<1.0	3.2	4.2	1.9	1.5
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<2.0	2.4	2.2	2.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	1.0	9.7	20.5	15.0	15.1
	Ammonia, Total (as N) (mg/L)	<0.010	<0.010	0.012	<0.010	0.012
	Bicarbonate (HCO3) (mg/L)	1.2	11.8	25.0	18.3	18.4
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	<0.10	0.31	0.16	0.10	0.11
	Fluoride (F) (mg/L)	<0.020	0.060	0.028	0.036	0.040
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	<0.0051	0.0386	<0.0051	0.0404	0.0452
	Nitrate (as N) (mg/L)	<0.0050	0.0386	<0.0050	0.0404	0.0452
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.20	0.26	0.43	0.30	0.28
	Phosphorus (P)-Total (mg/L)	<0.0010	0.0192	0.0278	0.0148	0.0082
	Sulfate (SO4) (mg/L)	<0.0030 <0.30	0.56	0.32	0.60	0.76
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	8.93	9.45	9.66	8.51
	Total Organic Carbon (mg/L)	<0.50	8.75	9.45	8.23	8.15
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030	0.0542	0.0848	0.0276	0.0303
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	<0.00010	0.00019	0.00020	0.00023	0.00029
	Barium (Ba)-Total (mg/L)	<0.00010	0.00587	0.00766	0.00939	0.00967
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	<0.050	2.98	5.98	4.28	4.45
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	<0.00010	0.00018	0.00018	0.00015	0.00011
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	0.00091	<0.00050	<0.00050	<0.00050 RRV

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	L2711813-11	L2711813-12	L2711813-13	L2711813-14	L2711813-15
		Description	W	W	W	W	W
		Sampled Date	29-MAY-22	29-MAY-22	29-MAY-22	30-MAY-22	30-MAY-22
		Sampled Time	12:51	14:49	15:22	16:07	16:51
		Client ID	AQF38	AQF43	AQF44	AQF42	AQF40
WATER							
Physical Tests	Hardness (as CaCO3) (mg/L)		21.3	11.8	11.5	10.7	11.6
	Total Suspended Solids (mg/L)		2.1	2.2	2.2	1.9	2.6
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		<2.0	2.2	2.1	2.3	2.1
	Alkalinity, Total (as CaCO3) (mg/L)		21.7	11.5	10.2	9.3	10.1
	Ammonia, Total (as N) (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Bicarbonate (HCO3) (mg/L)		26.5	14.0	12.4	11.3	12.3
	Bromide (Br) (mg/L)		<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)		<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)		0.16	0.32	0.26	0.27	0.26
	Fluoride (F) (mg/L)		0.068	0.063	0.063	0.063	0.059
	Hydroxide (OH) (mg/L)		<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)		0.0209	0.0317	0.0320	0.0387	0.0381
	Nitrate (as N) (mg/L)		0.0209	0.0317	0.0320	0.0387	0.0381
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		0.33	0.48	0.28	0.22	0.39
	Phosphorus (P)-Total (mg/L)		0.0138	0.0100	0.0178	0.0188	0.0203
	Sulfate (SO4) (mg/L)		<0.30	0.60	0.61	0.55	0.48
Cyanides	Cyanide, Weak Acid Diss (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010 PEHT	<0.0010 PEHT
	Cyanide, Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010 PEHT	<0.0010 PEHT
	Cyanide, Free (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010 PEHT	<0.0010 PEHT
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		10.9	11.1	10.7	12.3	9.70
	Total Organic Carbon (mg/L)		9.52	9.95	8.85	9.58 RRV	9.24
Total Metals	Aluminum (Al)-Total (mg/L)		0.0361	0.0606	0.0567	0.0540	0.0667
	Antimony (Sb)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)		0.00025	0.00023	0.00022	0.00023	0.00018
	Barium (Ba)-Total (mg/L)		0.00770	0.00595	0.00602	0.00585	0.00607
	Beryllium (Be)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)		5.98	3.21	3.00	2.84	3.03
	Cesium (Cs)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)		0.00013	0.00018	0.00016	0.00017	0.00018
	Cobalt (Co)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2711813-16	L2711813-17	L2711813-18	L2711813-19	
Description	W	W	W	W	
Sampled Date	31-MAY-22	31-MAY-22	31-MAY-22	31-MAY-22	
Sampled Time	13:10	14:09	15:29	08:44	
Client ID	AQM28	AQM29C	FIELD BLANK	AQF45S	
Grouping	**Analyte**				
WATER					
Physical Tests	Hardness (as CaCO3) (mg/L)	23.2	9.56	<0.20	12.0	
	Total Suspended Solids (mg/L)	5.5	19.1	<1.0	<1.0	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.6	3.4	2.3	3.1	
	Alkalinity, Total (as CaCO3) (mg/L)	7.7	6.9	<1.0	10.1	
	Ammonia, Total (as N) (mg/L)	0.021	0.055	<0.010	<0.010	
	Bicarbonate (HCO3) (mg/L)	9.4	8.4	<1.2	12.3	
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	
	Chloride (Cl) (mg/L)	0.86	0.35	<0.10	0.28	
	Fluoride (F) (mg/L)	0.049	0.050	<0.020	0.064	
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	
	Nitrate and Nitrite as N (mg/L)	0.0265	0.0099	<0.0051	0.0255	
	Nitrate (as N) (mg/L)	0.0265	0.0099	<0.0050	0.0255	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.48	0.36	<0.20	0.29	
	Phosphorus (P)-Total (mg/L)	0.0212	0.0265	0.0010	0.0201	
	Sulfate (SO4) (mg/L)	14.4	2.62	<0.0030 <0.30	0.62	
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	10.2	8.51	<0.50	10.7	
	Total Organic Carbon (mg/L)	11.3	8.16	<0.50	9.49	
Total Metals	Aluminum (Al)-Total (mg/L)	0.336	0.113	<0.0030	0.0701	
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Total (mg/L)	0.00026	0.00017	<0.00010	0.00018	
	Barium (Ba)-Total (mg/L)	0.00800	0.00588	<0.00010	0.00582	
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Total (mg/L)	0.0000813	0.0000108	<0.0000050	<0.0000050	
	Calcium (Ca)-Total (mg/L)	6.53	2.63	<0.050	3.05	
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Chromium (Cr)-Total (mg/L)	0.00057	0.00046	0.00013	0.00019	
	Cobalt (Co)-Total (mg/L)	0.00270	0.00038	<0.00010	<0.00010	
	Copper (Cu)-Total (mg/L)	0.0124	0.00204 RRV	<0.00050	<0.00050	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L2711813-1	L2711813-2	L2711813-3	L2711813-4	L2711813-5
	Description:	W	W	W	W	W
	Sampled Date:	28-MAY-22	28-MAY-22	28-MAY-22	28-MAY-22	28-MAY-22
	Sampled Time:	09:21	10:30	11:36	12:16	12:44
	Client ID:	AQM74	AQM73	AQM71	AQM72	QC-01
WATER						
Total Metals	Iron (Fe)-Total (mg/L)	0.627	0.470	0.194	1.75	0.593
	Lead (Pb)-Total (mg/L)	0.000095	<0.000050	<0.000050	0.000168	0.000086
	Lithium (Li)-Total (mg/L)	0.0010	0.0011	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.945	0.598	1.17	0.340	0.929
	Manganese (Mn)-Total (mg/L)	0.0607	0.0105	0.00886	0.0217	0.0539
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Mercury (Hg)-Total (ug/L)	0.00277	0.00346	0.00187	0.00487	0.00344
	Molybdenum (Mo)-Total (mg/L)	0.000384	<0.000050	0.000088 RRV	0.000124	0.000373
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	0.00063	<0.00050
	Phosphorus (P)-Total (mg/L)	0.040	0.036	<0.030	0.032	<0.030
	Potassium (K)-Total (mg/L)	0.545	0.471	0.942	0.545	0.540
	Rubidium (Rb)-Total (mg/L)	0.00086	0.00064	0.00119	0.00130	0.00083
	Selenium (Se)-Total (mg/L)	0.000053	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	1.81	2.85	2.39	2.75	1.77
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.803	0.641	0.851	0.492	0.788
	Strontium (Sr)-Total (mg/L)	0.0112	0.00708	0.0158	0.00520	0.0114
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	3.06	<0.50	<0.50
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	0.00015	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00297	0.00082	0.00418	0.00338	0.00310
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	0.000032	<0.000010	0.000019	<0.000010	0.000029
	Vanadium (V)-Total (mg/L)	0.00057	<0.00050	<0.00050	0.00068	0.00058
	Zinc (Zn)-Total (mg/L)	0.0177	<0.0030	<0.0030	0.0042	<0.0030
	Zirconium (Zr)-Total (mg/L)	0.00024	<0.00020	<0.00020	<0.00020	0.00027
Dissolved Metals	Dissolved Mercury Filtration Location	LAB	FIELD	LAB	FIELD	LAB
		FIELD	LAB	FIELD	LAB	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.163	0.0701	0.0393	0.135	0.181
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00023	0.00028	0.00018	0.00028	0.00021
	Barium (Ba)-Dissolved (mg/L)	0.00707	0.00325	0.00758	0.00463	0.00719
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2711813-6 W 28-MAY-22 TRIP BLANK	L2711813-7 W 29-MAY-22 09:42 AQF41	L2711813-8 W 29-MAY-22 10:13 AQF46	L2711813-9 W 29-MAY-22 11:13 AQF7S	L2711813-10 W 29-MAY-22 11:33 AQF7D
WATER						
Total Metals	Iron (Fe)-Total (mg/L)	<0.010	0.381	0.139	0.215	0.222
	Lead (Pb)-Total (mg/L)	<0.000050	0.000057	0.000070	<0.000050	<0.000050 RRV
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	<0.0050	0.859	1.21	1.40	1.42
	Manganese (Mn)-Total (mg/L)	<0.00010	0.0326	0.0250	0.0680	0.0805
	Mercury (Hg)-Total (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Mercury (Hg)-Total (ug/L)		0.00114	0.00105	0.00079	0.00079
	Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000083	0.000066 RRV	0.000069	0.000069
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030	0.034	<0.030	<0.030
	Potassium (K)-Total (mg/L)	<0.050	0.561	0.590	0.501	0.500
	Rubidium (Rb)-Total (mg/L)	<0.00020	0.00093	0.00067	0.00092	0.00098
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	0.000051	0.000051
	Silicon (Si)-Total (mg/L)	<0.10	2.37	0.65	1.08	1.10
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	<0.050	0.875	0.619	0.810	0.815
	Strontium (Sr)-Total (mg/L)	<0.00020	0.0127	0.00975	0.0121	0.0123
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00192
	Titanium (Ti)-Total (mg/L)	<0.00030	0.00164	0.00283	0.00043	0.00043
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	<0.000010	0.000027	0.000014	<0.000010	0.000011
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD	LAB	LAB	FIELD
	Dissolved Metals Filtration Location	LAB	LAB FIELD	FIELD FIELD	FIELD FIELD	LAB FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0300	0.0266	0.0226	0.0225
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00013	0.00017	0.00018	0.00025
	Barium (Ba)-Dissolved (mg/L)	<0.00010	0.00649	0.00660	0.00886	0.00944
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L2711813-11	L2711813-12	L2711813-13	L2711813-14	L2711813-15
	Description:	W	W	W	W	W
	Sampled Date:	29-MAY-22	29-MAY-22	29-MAY-22	30-MAY-22	30-MAY-22
	Sampled Time:	12:51	14:49	15:22	16:07	16:51
	Client ID:	AQF38	AQF43	AQF44	AQF42	AQF40
WATER						
Total Metals	Iron (Fe)-Total (mg/L)	0.313	0.354	0.360	0.485	0.452
	Lead (Pb)-Total (mg/L)	<0.000050	0.000069	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	0.0011	0.0015	0.0011	0.0011	0.0010
	Magnesium (Mg)-Total (mg/L)	1.44	0.896	0.904	0.839	0.913
	Manganese (Mn)-Total (mg/L)	0.0338	0.0285	0.0290	0.0660	0.0542
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Mercury (Hg)-Total (ug/L)	0.00068	0.00110	0.00111	0.00118	0.00127
	Molybdenum (Mo)-Total (mg/L)	0.00133	0.000109	0.000085	0.000089	0.000100
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.030	0.031	<0.030	<0.030	<0.030
	Potassium (K)-Total (mg/L)	0.508	0.541	0.535	0.531	0.540
	Rubidium (Rb)-Total (mg/L)	0.00079	0.00102	0.00094	0.00094	0.00101
	Selenium (Se)-Total (mg/L)	0.000061	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	1.22	2.30	2.25	2.27	2.27
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.988	1.07	1.08	1.06	1.05
	Strontium (Sr)-Total (mg/L)	0.0151	0.0133	0.0126	0.0122	0.0130
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00026	0.00014
	Titanium (Ti)-Total (mg/L)	0.00087	0.00178	0.00164	0.00153	0.00213
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	0.000013	0.000027	0.000026	0.000026	0.000031
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	0.0047	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	0.00021
Dissolved Metals	Dissolved Mercury Filtration Location	LAB	LAB	LAB	LAB	LAB
		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0244	0.0300	0.0323	0.0333	0.0391
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00014	0.00015	0.00015	0.00016	0.00015
	Barium (Ba)-Dissolved (mg/L)	0.00755	0.00530	0.00542	0.00559	0.00691
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2711813-16	L2711813-17	L2711813-18	L2711813-19	
Description	W	W	W	W	
Sampled Date	31-MAY-22	31-MAY-22	31-MAY-22	31-MAY-22	
Sampled Time	13:10	14:09	15:29	08:44	
Client ID	AQM28	AQM29C	FIELD BLANK	AQF45S	
Grouping	**Analyte**				
WATER					
Total Metals	Iron (Fe)-Total (mg/L)	1.09	0.420	0.033	0.363	
	Lead (Pb)-Total (mg/L)	0.000195	0.000053	<0.000050	<0.000050	
	Lithium (Li)-Total (mg/L)	0.0012	<0.0010	<0.0010	0.0012	
	Magnesium (Mg)-Total (mg/L)	1.51	0.728	<0.0050	0.916	
	Manganese (Mn)-Total (mg/L)	0.0841	0.0232	0.00024	0.0235	
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Mercury (Hg)-Total (ug/L)	0.00135	0.00091	<0.00050	0.00122	
	Molybdenum (Mo)-Total (mg/L)	0.000060	<0.000050	<0.000050	0.000081	
	Nickel (Ni)-Total (mg/L)	0.106	0.0150	<0.00050	<0.00050	
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	
	Potassium (K)-Total (mg/L)	0.992	0.507	<0.050	0.526	
	Rubidium (Rb)-Total (mg/L)	0.00133	0.00090	<0.00020	0.00100	
	Selenium (Se)-Total (mg/L)	0.000052	0.000055	<0.000050	<0.000050	
	Silicon (Si)-Total (mg/L)	2.55	2.06	<0.10	2.16	
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Total (mg/L)	1.89	0.935	0.257	1.05	
	Strontium (Sr)-Total (mg/L)	0.0198	0.0114	<0.00020	0.0131	
	Sulfur (S)-Total (mg/L)	4.54	0.97	<0.50	<0.50	
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Tin (Sn)-Total (mg/L)	0.00031	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	0.00236	0.00298	<0.00030	0.00236	
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Uranium (U)-Total (mg/L)	0.000045	0.000030	<0.000010	0.000030	
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Total (mg/L)	0.0342	0.0040	<0.0030	<0.0030	
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	LAB	LAB	FIELD	
		LAB	FIELD	FIELD	LAB	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.179	0.0476	<0.0010	0.0401	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00019	0.00014	<0.00010	0.00016	
	Barium (Ba)-Dissolved (mg/L)	0.00731	0.00556	<0.00010	0.00539	
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2711813-1 W 28-MAY-22 09:21 AQM74	L2711813-2 W 28-MAY-22 10:30 AQM73	L2711813-3 W 28-MAY-22 11:36 AQM71	L2711813-4 W 28-MAY-22 12:16 AQM72	L2711813-5 W 28-MAY-22 12:44 QC-01
WATER						
Dissolved Metals	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000059	0.0000101	<0.0000050	0.0000107	0.0000055
	Calcium (Ca)-Dissolved (mg/L)	4.27	3.33	10.4	1.19	4.29
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	0.000011	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Dissolved (mg/L)	0.00025	0.00018	0.00012	0.00026	0.00027
	Cobalt (Co)-Dissolved (mg/L)	0.00021	<0.00010	<0.00010	0.00022	0.00021
	Copper (Cu)-Dissolved (mg/L)	0.00152	0.00048	0.00166 RRV	0.00083	0.00068
	Iron (Fe)-Dissolved (mg/L)	0.545	0.477	0.116	1.77	0.515
	Lead (Pb)-Dissolved (mg/L)	0.000107	<0.000050	0.000052	0.000069	0.000071
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.888	0.615	1.08	0.359	0.954
	Manganese (Mn)-Dissolved (mg/L)	0.0490	0.00929	0.00654	0.0253	0.0522
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Mercury (Hg)-Dissolved (ug/L)	0.00263	0.00299	0.00161	0.00351	0.00252
	Molybdenum (Mo)-Dissolved (mg/L)	0.000468	<0.000050	0.000197 RRV	<0.000050	0.000352
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00063	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.538	0.445	0.903	0.561	0.555
	Rubidium (Rb)-Dissolved (mg/L)	0.00082	0.00067	0.00093	0.00139	0.00083
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000054
	Silicon (Si)-Dissolved (mg/L)	1.56	2.61	2.08	2.47	1.77
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.791	0.641	0.831	0.483	0.824
	Strontium (Sr)-Dissolved (mg/L)	0.0108	0.00709	0.0152	0.00543	0.0108
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	2.95	<0.50	<0.50
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00248	0.00079	0.00059	0.00306	0.00231
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.000027	<0.000010	0.000012	<0.000010	0.000028
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00065	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0020	0.0025	0.0019	0.0022	0.0015
	Zirconium (Zr)-Dissolved (mg/L)	0.00028	<0.00020	<0.00020	0.00021	0.00030
Speciated Metals	Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	0.68
	Methylmercury (as MeHg)-Total (ug/L)	0.000253	0.000093	0.000100	0.000099	0.000188

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2711813-6	L2711813-7	L2711813-8	L2711813-9	L2711813-10
Description	W	W	W	W	W
Sampled Date	28-MAY-22	29-MAY-22	29-MAY-22	29-MAY-22	29-MAY-22
Sampled Time		09:42	10:13	11:13	11:33
Client ID	TRIP BLANK	AQF41	AQF46	AQF7S	AQF7D
Grouping / **Analyte**					
WATER					
Dissolved Metals Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved (mg/L)	<0.050	2.91	5.63	4.33	4.16
Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00012	<0.00010	0.00010	0.00011
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00166	0.00111	0.00028	0.00949 RRV
Iron (Fe)-Dissolved (mg/L)	<0.010	0.218	0.057	0.114	0.129
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000425 RRV
Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved (mg/L)	<0.0050	0.839	1.18	1.41	1.40
Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.0188	0.00969	0.00704	0.00255
Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
Mercury (Hg)-Dissolved (ug/L)		0.00098	0.00089	0.00068	0.00066
Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000121	0.000306 RRV	0.000108	0.000097
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00052
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
Potassium (K)-Dissolved (mg/L)	<0.050	0.573	0.567	0.515	0.508
Rubidium (Rb)-Dissolved (mg/L)	<0.00020	0.00088	0.00061	0.00086	0.00089
Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si)-Dissolved (mg/L)	<0.050	2.37	0.508	1.07	1.11
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	<0.050	0.909	0.591	0.832	0.822
Strontium (Sr)-Dissolved (mg/L)	<0.00010	0.0121	0.00918	0.0119	0.0119
Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00140
Titanium (Ti)-Dissolved (mg/L)	<0.00030	0.00044	0.00060	0.00033	<0.00030
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved (mg/L)	<0.000010	0.000021	<0.000010	<0.000010	<0.000010
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0256 RRV	0.0068	0.0010	0.0061
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50
Methylmercury (as MeHg)-Total (ug/L)		0.000041	0.000069	0.000055	0.000092

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2711813-11	L2711813-12	L2711813-13	L2711813-14	L2711813-15
Description	W	W	W	W	W
Sampled Date	29-MAY-22	29-MAY-22	29-MAY-22	30-MAY-22	30-MAY-22
Sampled Time	12:51	14:49	15:22	16:07	16:51
Client ID	AQF38	AQF43	AQF44	AQF42	AQF40
Grouping / **Analyte**					
WATER					
Dissolved Metals Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved (mg/L)	6.12	3.23	3.15	2.87	3.15
Cesium (Cs)-Dissolved (mg/L)	<0.000010	0.000045	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00012	0.00012	0.00014	0.00016
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	0.00060	0.00048	0.00042	0.00069	0.00085
Iron (Fe)-Dissolved (mg/L)	0.198	0.205	0.218	0.302	0.275
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	0.0011	<0.0010	0.0011
Magnesium (Mg)-Dissolved (mg/L)	1.45	0.917	0.890	0.859	0.899
Manganese (Mn)-Dissolved (mg/L)	0.0144	0.0193	0.0191	0.0444	0.0352
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Mercury (Hg)-Dissolved (ug/L)	0.00057	0.00107	0.00089	0.00155	0.00080
Molybdenum (Mo)-Dissolved (mg/L)	0.00129	0.000095	0.000084	0.000092	0.000155
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
Potassium (K)-Dissolved (mg/L)	0.512	0.563	0.552	0.549	0.557
Rubidium (Rb)-Dissolved (mg/L)	0.00088	0.00086	0.00086	0.00096	0.00088
Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si)-Dissolved (mg/L)	1.26	2.28	2.36	2.43	2.39
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	0.804	0.930	0.894	0.902	0.888
Strontium (Sr)-Dissolved (mg/L)	0.0140	0.0126	0.0124	0.0122	0.0125
Sulfur (S)-Dissolved (mg/L)	<0.50	0.60	<0.50	<0.50	<0.50
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00020
Titanium (Ti)-Dissolved (mg/L)	<0.00030	0.00044	0.00047	0.00051	0.00073
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved (mg/L)	<0.000010	0.000023	0.000023	0.000022	0.000024
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0015	<0.0010	0.0012	0.0055
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals Chromium, Hexavalent (ug/L)	<0.50	<0.50	0.53	<0.50	<0.50
Methylmercury (as MeHg)-Total (ug/L)	<0.000020	0.000042	0.000039	0.000048	0.000048

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2711813-16	L2711813-17	L2711813-18	L2711813-19	
Description	W	W	W	W	
Sampled Date	31-MAY-22	31-MAY-22	31-MAY-22	31-MAY-22	
Sampled Time	13:10	14:09	15:29	08:44	
Client ID	AQM28	AQM29C	FIELD BLANK	AQF45S	
Grouping	**Analyte**				
WATER					
Dissolved Metals	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.0000289	0.0000065	<0.0000050	<0.0000050	
	Calcium (Ca)-Dissolved (mg/L)	6.83	2.67	<0.050	3.25	
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Chromium (Cr)-Dissolved (mg/L)	0.00017	0.00015	<0.00010	0.00012	
	Cobalt (Co)-Dissolved (mg/L)	0.00191	0.00026	<0.00010	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	0.00802	0.00382	0.00062	0.00039	
	Iron (Fe)-Dissolved (mg/L)	0.583	0.213	<0.010	0.215	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000063	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Magnesium (Mg)-Dissolved (mg/L)	1.49	0.698	<0.0050	0.942	
	Manganese (Mn)-Dissolved (mg/L)	0.0620	0.0126	<0.00010	0.0125	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Mercury (Hg)-Dissolved (ug/L)	0.00077	0.00059	<0.00050	0.00076	
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000091	<0.000050	0.000081	
	Nickel (Ni)-Dissolved (mg/L)	0.0977	0.0136	<0.00050	<0.00050	
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	
	Potassium (K)-Dissolved (mg/L)	0.845	0.522	<0.050	0.572	
	Rubidium (Rb)-Dissolved (mg/L)	0.00104	0.00083	<0.00020	0.00084	
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Silicon (Si)-Dissolved (mg/L)	2.71	2.15	<0.050	2.26	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	1.11	0.780	0.233	0.905	
	Strontium (Sr)-Dissolved (mg/L)	0.0186	0.0105	0.00012	0.0125	
	Sulfur (S)-Dissolved (mg/L)	4.83	0.91	<0.50	<0.50	
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	0.00063	0.00036	<0.00030	0.00068	
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Uranium (U)-Dissolved (mg/L)	0.000036	0.000020	<0.000010	0.000026	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0165	0.0038	0.0011	0.0013	
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Speciated Metals	Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	
	Methylmercury (as MeHg)-Total (ug/L)	0.000053	0.000031	<0.000020	0.000031	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Methylmercury (as MeHg)-Total	B	L2711813-1
Laboratory Control Sample	Sodium (Na)-Total	MES	L2711813-11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Dissolved Organic Carbon	MS-B	L2711813-1, -10, -11, -13, -15, -16, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Dissolved Organic Carbon	MS-B	L2711813-12, -14
Matrix Spike	Total Organic Carbon	MS-B	L2711813-1, -10, -11, -13, -15, -16, -17, -18, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L2711813-12, -14, -19, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2711813-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2711813-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2711813-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2711813-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2711813-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2711813-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2711813-1, -2, -3, -4
Matrix Spike	Antimony (Sb)-Total	MS-B	L2711813-11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Arsenic (As)-Total	MS-B	L2711813-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Arsenic (As)-Total	MS-B	L2711813-11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Barium (Ba)-Total	MS-B	L2711813-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L2711813-11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Calcium (Ca)-Total	MS-B	L2711813-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2711813-11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2711813-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2711813-11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Manganese (Mn)-Total	MS-B	L2711813-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Total	MS-B	L2711813-11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Potassium (K)-Total	MS-B	L2711813-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Total	MS-B	L2711813-11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Sodium (Na)-Total	MS-B	L2711813-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L2711813-11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Strontium (Sr)-Total	MS-B	L2711813-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2711813-11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Sulfur (S)-Total	MS-B	L2711813-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Total	MS-B	L2711813-11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Phosphorus (P)-Total	MS-B	L2711813-6
Matrix Spike	Sulfate (SO4)	MS-B	L2711813-15, -18, -2, -3, -4, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-TITR-TB	Water	Acidity	APHA 2310 B modified

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified

Reference Information

endpoint.

ALK-CO3CO3-CALC-WP Water Alkalinity, Carbonate CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP Water Alkalinity, Bicarbonate CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP Water Alkalinity, Hydroxide CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP Water Alkalinity, Total (as CaCO3) APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BR-IC-N-WP Water Bromide in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

C-DOC-HTC-WP Water Dissolved Organic Carbon by Combustion APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

C-TOC-HTC-WP Water Total Organic Carbon by Combustion APHA 5310 B-WP

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP Water Chloride in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-L-CFA-WT Water Low Level Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-WT Water Low Level Total Cyanide in water by CFA ISO 14403-2:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, however it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-WT Water Low level WAD Cyanide in water by CFA APHA 4500CN I-Weak acid Dist Colorimet

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

CR-CR6-PWQO-IC-WT Water Chromium +6 EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-SCREEN-WP Water Conductivity Screen (Internal Use Only) APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

Reference Information

F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-WP	Water	Mercury Dissolved	APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-D-U-CVAF-VA	Water	Diss. Mercury in Water by CVAFS (Ultra)	APHA 3030 B / EPA 1631 REV. E

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

HG-T-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

MEHG-T-GCAF-VA	Water	Total Methylmercury in Water by GCAFS	EPA 1630 (mod)

This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".

MET-D-CCMS-WP	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-TOTKJ-WP	Water	Total Kjeldahl Nitrogen	APHA 4500 NorgD (modified)

Aqueous samples are digested in a block digester with sulfuric acid and copper sulfate as a catalyst. Total Kjeldahl Nitrogen is then analyzed using a discrete analyzer with colorimetric detection.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-L-IC-N-WP	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

P-T-L-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically

Reference Information

after persulphate digestion of the sample.

SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-LR-WP	Water	Total Suspended Solids	APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 Œ 105°C.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
TB	ALS ENVIRONMENTAL - THUNDER BAY, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Alamos Gold Inc.
C/O Stantec Consulting 500 - 311 Portage Avenue
Winnipeg MB R3B 2B9
Contact: KAREN MATHERS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACY-TITR-TB	**Water**							
Batch R5796718								
WG3736562-2 LCS								
Acidity (as CaCO3)			114.0		%		85-115	10-JUN-22
WG3736562-1 MB								
Acidity (as CaCO3)			<2.0		mg/L		3	10-JUN-22
Batch R5803740								
WG3736973-3 DUP		**L2711813-17**						
Acidity (as CaCO3)		3.4	3.2		mg/L	8.5	20	16-JUN-22
WG3736973-2 LCS								
Acidity (as CaCO3)			102.7		%		85-115	16-JUN-22
WG3736973-1 MB								
Acidity (as CaCO3)			<2.0		mg/L		3	16-JUN-22
ALK-TITR-WP	**Water**							
Batch R5793756								
WG3735149-24 LCS								
Alkalinity, Total (as CaCO3)			104.9		%		85-115	02-JUN-22
WG3735149-21 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-JUN-22
Batch R5794537								
WG3735861-4 LCS								
Alkalinity, Total (as CaCO3)			103.2		%		85-115	03-JUN-22
WG3735861-1 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-JUN-22
BR-IC-N-WP	**Water**							
Batch R5794276								
WG3734788-14 LCS								
Bromide (Br)			102.4		%		85-115	02-JUN-22
WG3734788-13 MB								
Bromide (Br)			<0.10		mg/L		0.1	02-JUN-22
Batch R5797901								
WG3735270-7 DUP		**L2711813-2**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	03-JUN-22
WG3735270-2 LCS								
Bromide (Br)			99.9		%		85-115	03-JUN-22
WG3735270-6 LCS								
Bromide (Br)			98.6		%		85-115	03-JUN-22
WG3735270-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	03-JUN-22
WG3735270-5 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-IC-N-WP	**Water**							
Batch R5797901								
WG3735270-5 MB								
Bromide (Br)			<0.10		mg/L		0.1	03-JUN-22
WG3735270-8 MS		**L2711813-2**						
Bromide (Br)			104.6		%		75-125	03-JUN-22
C-DOC-HTC-WP	**Water**							
Batch R5802397								
WG3740365-3 DUP		**L2711813-18**						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	15-JUN-22
WG3740365-2 LCS								
Dissolved Organic Carbon			96.3		%		80-120	15-JUN-22
WG3740365-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	15-JUN-22
WG3740365-4 MS		**L2711813-19**						
Dissolved Organic Carbon			N/A	MS-B	%		-	15-JUN-22
Batch R5804813								
WG3741508-2 LCS								
Dissolved Organic Carbon			107.3		%		80-120	17-JUN-22
WG3741508-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-JUN-22
C-TOC-HTC-WP	**Water**							
Batch R5802398								
WG3740387-3 DUP		**L2711813-1**						
Total Organic Carbon		20.3	20.2		mg/L	0.1	20	15-JUN-22
WG3740387-2 LCS								
Total Organic Carbon			95.7		%		80-120	15-JUN-22
WG3740387-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	15-JUN-22
WG3740387-4 MS		**L2711813-2**						
Total Organic Carbon			N/A	MS-B	%		-	15-JUN-22
Batch R5804812								
WG3741547-2 LCS								
Total Organic Carbon			106.2		%		80-120	17-JUN-22
WG3741547-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	17-JUN-22
CL-L-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-L-IC-N-WP	**Water**							
Batch R5794276								
WG3734788-14 LCS								
Chloride (Cl)			98.4		%		90-110	02-JUN-22
WG3734788-13 MB								
Chloride (Cl)			<0.10		mg/L		0.1	02-JUN-22
Batch R5797901								
WG3735270-7 DUP		**L2711813-2**						
Chloride (Cl)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	03-JUN-22
WG3735270-2 LCS								
Chloride (Cl)			98.5		%		90-110	03-JUN-22
WG3735270-6 LCS								
Chloride (Cl)			98.6		%		90-110	03-JUN-22
WG3735270-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	03-JUN-22
WG3735270-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	03-JUN-22
WG3735270-8 MS		**L2711813-2**						
Chloride (Cl)			103.5		%		75-125	03-JUN-22
CN-FREE-L-CFA-WT	**Water**							
Batch R5796119								
WG3737706-12 LCS								
Cyanide, Free			101.6		%		80-120	09-JUN-22
WG3737706-11 MB								
Cyanide, Free			<0.0010		mg/L		0.001	09-JUN-22
Batch R5797737								
WG3738104-6 LCS								
Cyanide, Free			110.6		%		80-120	10-JUN-22
WG3738104-5 MB								
Cyanide, Free			<0.0010		mg/L		0.001	10-JUN-22
Batch R5798205								
WG3738910-9 DUP		**L2711813-19**						
Cyanide, Free		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	13-JUN-22
WG3738910-2 LCS								
Cyanide, Free			97.9		%		80-120	13-JUN-22
WG3738910-7 LCS								
Cyanide, Free			93.6		%		80-120	13-JUN-22
WG3738910-1 MB								
Cyanide, Free			<0.0010		mg/L		0.001	13-JUN-22
WG3738910-6 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-FREE-L-CFA-WT	**Water**							
Batch R5798205								
WG3738910-6 MB								
Cyanide, Free			<0.0010		mg/L		0.001	13-JUN-22
WG3738910-10 MS		**L2711813-19**						
Cyanide, Free			101.7		%		75-125	13-JUN-22
Batch R5802816								
WG3740378-2 LCS								
Cyanide, Free			90.0		%		80-120	16-JUN-22
WG3740378-1 MB								
Cyanide, Free			<0.0010		mg/L		0.001	16-JUN-22
Batch R5808490								
WG3744270-24 DUP		**L2711813-3**						
Cyanide, Free		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-JUN-22
WG3744270-22 LCS								
Cyanide, Free			101.4		%		80-120	27-JUN-22
WG3744270-21 MB								
Cyanide, Free			<0.0010		mg/L		0.001	27-JUN-22
WG3744270-25 MS		**L2711813-3**						
Cyanide, Free			102.3		%		75-125	27-JUN-22
CN-T-L-CFA-WT	**Water**							
Batch R5796119								
WG3737706-12 LCS								
Cyanide, Total			97.2		%		80-120	09-JUN-22
WG3737706-11 MB								
Cyanide, Total			<0.0010		mg/L		0.001	09-JUN-22
Batch R5797737								
WG3738104-6 LCS								
Cyanide, Total			103.6		%		80-120	10-JUN-22
WG3738104-5 MB								
Cyanide, Total			<0.0010		mg/L		0.001	10-JUN-22
Batch R5798205								
WG3738910-9 DUP		**L2711813-19**						
Cyanide, Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	13-JUN-22
WG3738910-2 LCS								
Cyanide, Total			95.4		%		80-120	13-JUN-22
WG3738910-7 LCS								
Cyanide, Total			94.9		%		80-120	13-JUN-22
WG3738910-1 MB								
Cyanide, Total			<0.0010		mg/L		0.001	13-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-T-L-CFA-WT	**Water**							
Batch R5798205								
WG3738910-6 MB								
Cyanide, Total			<0.0010		mg/L		0.001	13-JUN-22
WG3738910-10 MS		**L2711813-19**						
Cyanide, Total			95.3		%		70-130	13-JUN-22
Batch R5802816								
WG3740378-2 LCS								
Cyanide, Total			91.9		%		80-120	16-JUN-22
WG3740378-1 MB								
Cyanide, Total			<0.0010		mg/L		0.001	16-JUN-22
Batch R5808490								
WG3744270-24 DUP		**L2711813-3**						
Cyanide, Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-JUN-22
WG3744270-22 LCS								
Cyanide, Total			100.9		%		80-120	27-JUN-22
WG3744270-21 MB								
Cyanide, Total			<0.0010		mg/L		0.001	27-JUN-22
WG3744270-25 MS		**L2711813-3**						
Cyanide, Total			102.7		%		70-130	27-JUN-22
CN-WAD-L-CFA-WT	**Water**							
Batch R5796119								
WG3737706-12 LCS								
Cyanide, Weak Acid Diss			111.8		%		80-120	09-JUN-22
WG3737706-11 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	09-JUN-22
Batch R5797737								
WG3738104-6 LCS								
Cyanide, Weak Acid Diss			110.4		%		80-120	10-JUN-22
WG3738104-5 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	10-JUN-22
Batch R5798205								
WG3738910-9 DUP		**L2711813-19**						
Cyanide, Weak Acid Diss		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	13-JUN-22
WG3738910-2 LCS								
Cyanide, Weak Acid Diss			101.7		%		80-120	13-JUN-22
WG3738910-7 LCS								
Cyanide, Weak Acid Diss			98.6		%		80-120	13-JUN-22
WG3738910-1 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	13-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-WAD-L-CFA-WT	**Water**							
Batch R5798205								
WG3738910-6 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	13-JUN-22
WG3738910-10 MS		**L2711813-19**						
Cyanide, Weak Acid Diss			102.8		%		70-130	13-JUN-22
Batch R5802816								
WG3740378-2 LCS								
Cyanide, Weak Acid Diss			98.0		%		80-120	16-JUN-22
WG3740378-1 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	16-JUN-22
Batch R5808490								
WG3744270-24 DUP		**L2711813-3**						
Cyanide, Weak Acid Diss		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-JUN-22
WG3744270-22 LCS								
Cyanide, Weak Acid Diss			106.9		%		80-120	27-JUN-22
WG3744270-21 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	27-JUN-22
WG3744270-25 MS		**L2711813-3**						
Cyanide, Weak Acid Diss			111.9		%		70-130	27-JUN-22
CR-CR6-PWQO-IC-WT	**Water**							
Batch R5795493								
WG3736495-2 LCS								
Chromium, Hexavalent			99.1		%		80-120	07-JUN-22
WG3736495-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	07-JUN-22
Batch R5795494								
WG3736583-2 LCS								
Chromium, Hexavalent			99.0		%		80-120	07-JUN-22
WG3736583-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	07-JUN-22
Batch R5809199								
WG3744932-2 LCS								
Chromium, Hexavalent			99.3		%		80-120	28-JUN-22
WG3744932-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	28-JUN-22
F-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP	**Water**							
Batch R5794276								
WG3734788-14 LCS								
Fluoride (F)			103.2		%		90-110	02-JUN-22
WG3734788-13 MB								
Fluoride (F)			<0.020		mg/L		0.02	02-JUN-22
Batch R5797901								
WG3735270-7 DUP		**L2711813-2**						
Fluoride (F)		0.033	0.032		mg/L	2.9	20	03-JUN-22
WG3735270-2 LCS								
Fluoride (F)			99.2		%		90-110	03-JUN-22
WG3735270-6 LCS								
Fluoride (F)			99.6		%		90-110	03-JUN-22
WG3735270-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	03-JUN-22
WG3735270-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	03-JUN-22
WG3735270-8 MS		**L2711813-2**						
Fluoride (F)			104.0		%		75-125	03-JUN-22
HG-D-CVAA-WP	**Water**							
Batch R5805714								
WG3742625-3 DUP		**L2711813-1**						
Mercury (Hg)-Dissolved		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	21-JUN-22
WG3742625-2 LCS								
Mercury (Hg)-Dissolved			93.4		%		80-120	21-JUN-22
WG3742625-1 MB								
Mercury (Hg)-Dissolved			<0.000005(		mg/L		0.000005	21-JUN-22
WG3742625-4 MS		**L2711813-2**						
Mercury (Hg)-Dissolved			93.9		%		70-130	21-JUN-22
Batch R5806557								
WG3743528-3 DUP		**L2711813-13**						
Mercury (Hg)-Dissolved		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	24-JUN-22
WG3743528-2 LCS								
Mercury (Hg)-Dissolved			91.5		%		80-120	24-JUN-22
WG3743528-1 MB								
Mercury (Hg)-Dissolved			<0.000005(		mg/L		0.000005	24-JUN-22
WG3743528-4 MS		**L2711813-14**						
Mercury (Hg)-Dissolved			102.2		%		70-130	24-JUN-22
HG-D-U-CVAF-VA	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-U-CVAF-VA	**Water**							
Batch R5812236								
WG3745834-3 DUP		**L2711813-1**						
Mercury (Hg)-Dissolved		0.00263	0.00258		ug/L	2.0	20	02-JUL-22
WG3745834-2 LCS								
Mercury (Hg)-Dissolved			110.2		%		80-120	02-JUL-22
WG3745834-1 MB		**NP**						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	02-JUL-22
Batch R5812239								
WG3745863-2 LCS								
Mercury (Hg)-Dissolved			112.2		%		80-120	02-JUL-22
WG3745863-1 MB								
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	02-JUL-22
WG3745834-4 MS		**L2711813-16**						
Mercury (Hg)-Dissolved			93.9		%		70-130	02-JUL-22
HG-T-CVAA-WP	**Water**							
Batch R5805714								
WG3742623-2 LCS								
Mercury (Hg)-Total			98.4		%		80-120	21-JUN-22
WG3742623-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	21-JUN-22
Batch R5806557								
WG3743525-3 DUP		**L2711813-15**						
Mercury (Hg)-Total		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	24-JUN-22
WG3743525-2 LCS								
Mercury (Hg)-Total			98.8		%		80-120	24-JUN-22
WG3743525-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	24-JUN-22
WG3743525-4 MS		**L2711813-16**						
Mercury (Hg)-Total			98.2		%		70-130	24-JUN-22
HG-T-U-CVAF-VA	**Water**							
Batch R5812236								
WG3745864-7 DUP		**L2711813-2**						
Mercury (Hg)-Total		0.00346	0.00329		ug/L	5.2	20	02-JUL-22
WG3745864-2 LCS								
Mercury (Hg)-Total			105.9		%		80-120	02-JUL-22
WG3745864-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	02-JUL-22
WG3745864-8 MS		**L2711813-19**						
Mercury (Hg)-Total			105.5		%		70-130	02-JUL-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MEHG-T-GCAF-VA	**Water**							
Batch	**R5813123**							
WG3746284-2	**DUP**	**L2711813-19**						
Methylmercury (as MeHg)-Total		0.000031	0.000034		ug/L	9.3	20	04-JUL-22
WG3745895-3	**LCS**							
Methylmercury (as MeHg)-Total			92.0		%		70-130	02-JUL-22
WG3746284-3	**LCS**							
Methylmercury (as MeHg)-Total			96.2		%		70-130	04-JUL-22
WG3746285-3	**LCS**							
Methylmercury (as MeHg)-Total			81.8		%		70-130	04-JUL-22
WG3745895-1	**MB**							
Methylmercury (as MeHg)-Total			<0.000020		ug/L		0.00002	02-JUL-22
WG3746284-1	**MB**							
Methylmercury (as MeHg)-Total			<0.000020		ug/L		0.00002	04-JUL-22
WG3746285-1	**MB**							
Methylmercury (as MeHg)-Total			0.000033	B	ug/L		0.00002	04-JUL-22
WG3745895-5	**MS**	**L2711813-3**						
Methylmercury (as MeHg)-Total			82.6		%		70-130	02-JUL-22
WG3746284-4	**MS**	**L2711813-11**						
Methylmercury (as MeHg)-Total			86.6		%		70-130	04-JUL-22
MET-D-CCMS-WP	**Water**							
Batch	**R5795695**							
WG3736314-4	**DUP**	**L2711813-5**						
Aluminum (Al)-Dissolved		0.181	0.178		mg/L	1.8	20	07-JUN-22
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-JUN-22
Arsenic (As)-Dissolved		0.00021	0.00021		mg/L	0.9	20	07-JUN-22
Barium (Ba)-Dissolved		0.00719	0.00722		mg/L	0.5	20	07-JUN-22
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-JUN-22
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-JUN-22
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	07-JUN-22
Cadmium (Cd)-Dissolved		0.0000055	<0.000005(	RPD-NA	mg/L	N/A	20	07-JUN-22
Calcium (Ca)-Dissolved		4.29	4.34		mg/L	1.1	20	07-JUN-22
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-JUN-22
Chromium (Cr)-Dissolved		0.00027	0.00026		mg/L	3.3	20	07-JUN-22
Cobalt (Co)-Dissolved		0.00021	0.00020		mg/L	5.0	20	07-JUN-22
Copper (Cu)-Dissolved		0.00068	0.00069		mg/L	2.2	20	07-JUN-22
Iron (Fe)-Dissolved		0.515	0.517		mg/L	0.4	20	07-JUN-22
Lead (Pb)-Dissolved		0.000071	0.000073		mg/L	3.3	20	07-JUN-22
Magnesium (Mg)-Dissolved		0.954	0.940		mg/L	1.5	20	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5795695								
WG3736314-4 DUP		**L2711813-5**						
Manganese (Mn)-Dissolved		0.0522	0.0514		mg/L	1.5	20	07-JUN-22
Molybdenum (Mo)-Dissolved		0.000352	0.000359		mg/L	2.0	20	07-JUN-22
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-JUN-22
Phosphorus (P)-Dissolved		<0.030	<0.030	RPD-NA	mg/L	N/A	20	07-JUN-22
Potassium (K)-Dissolved		0.555	0.547		mg/L	1.5	20	07-JUN-22
Rubidium (Rb)-Dissolved		0.00083	0.00079		mg/L	4.7	20	07-JUN-22
Selenium (Se)-Dissolved		0.000054	<0.000050	RPD-NA	mg/L	N/A	20	07-JUN-22
Silicon (Si)-Dissolved		1.77	1.74		mg/L	1.4	20	07-JUN-22
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-JUN-22
Sodium (Na)-Dissolved		0.824	0.815		mg/L	1.2	20	07-JUN-22
Strontium (Sr)-Dissolved		0.0108	0.0109		mg/L	0.8	20	07-JUN-22
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-JUN-22
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	07-JUN-22
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-JUN-22
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-JUN-22
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-JUN-22
Titanium (Ti)-Dissolved		0.00231	0.00242		mg/L	4.7	20	07-JUN-22
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-JUN-22
Uranium (U)-Dissolved		0.000028	0.000028		mg/L	2.4	20	07-JUN-22
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-JUN-22
Zinc (Zn)-Dissolved		0.0015	0.0017		mg/L	16	20	07-JUN-22
Zirconium (Zr)-Dissolved		0.00030	0.00030		mg/L	0.3	20	07-JUN-22
WG3736313-2 LCS								
Aluminum (Al)-Dissolved			101.9		%		80-120	07-JUN-22
Antimony (Sb)-Dissolved			104.2		%		80-120	07-JUN-22
Arsenic (As)-Dissolved			100.9		%		80-120	07-JUN-22
Barium (Ba)-Dissolved			98.2		%		80-120	07-JUN-22
Beryllium (Be)-Dissolved			100.7		%		80-120	07-JUN-22
Bismuth (Bi)-Dissolved			104.2		%		80-120	07-JUN-22
Boron (B)-Dissolved			93.0		%		80-120	07-JUN-22
Cadmium (Cd)-Dissolved			102.1		%		80-120	07-JUN-22
Calcium (Ca)-Dissolved			100.4		%		80-120	07-JUN-22
Cesium (Cs)-Dissolved			98.2		%		80-120	07-JUN-22
Chromium (Cr)-Dissolved			100.9		%		80-120	07-JUN-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5795695								
WG3736313-2 LCS								
Cobalt (Co)-Dissolved			103.0		%		80-120	07-JUN-22
Copper (Cu)-Dissolved			101.1		%		80-120	07-JUN-22
Iron (Fe)-Dissolved			98.2		%		80-120	07-JUN-22
Lead (Pb)-Dissolved			101.4		%		80-120	07-JUN-22
Lithium (Li)-Dissolved			91.4		%		80-120	07-JUN-22
Magnesium (Mg)-Dissolved			102.0		%		80-120	07-JUN-22
Manganese (Mn)-Dissolved			100.7		%		80-120	07-JUN-22
Molybdenum (Mo)-Dissolved			101.2		%		80-120	07-JUN-22
Nickel (Ni)-Dissolved			100.5		%		80-120	07-JUN-22
Phosphorus (P)-Dissolved			107.6		%		80-120	07-JUN-22
Potassium (K)-Dissolved			101.4		%		80-120	07-JUN-22
Rubidium (Rb)-Dissolved			99.6		%		80-120	07-JUN-22
Selenium (Se)-Dissolved			102.8		%		80-120	07-JUN-22
Silicon (Si)-Dissolved			103.3		%		80-120	07-JUN-22
Silver (Ag)-Dissolved			101.7		%		80-120	07-JUN-22
Sodium (Na)-Dissolved			105.5		%		80-120	07-JUN-22
Strontium (Sr)-Dissolved			100.8		%		80-120	07-JUN-22
Sulfur (S)-Dissolved			106.1		%		80-120	07-JUN-22
Tellurium (Te)-Dissolved			98.1		%		80-120	07-JUN-22
Thallium (Tl)-Dissolved			101.7		%		80-120	07-JUN-22
Thorium (Th)-Dissolved			98.4		%		80-120	07-JUN-22
Tin (Sn)-Dissolved			99.3		%		80-120	07-JUN-22
Titanium (Ti)-Dissolved			99.6		%		80-120	07-JUN-22
Tungsten (W)-Dissolved			94.5		%		80-120	07-JUN-22
Uranium (U)-Dissolved			97.0		%		80-120	07-JUN-22
Vanadium (V)-Dissolved			101.8		%		80-120	07-JUN-22
Zinc (Zn)-Dissolved			104.3		%		80-120	07-JUN-22
Zirconium (Zr)-Dissolved			96.8		%		80-120	07-JUN-22
WG3736314-2 LCS								
Aluminum (Al)-Dissolved			113.8		%		80-120	07-JUN-22
Antimony (Sb)-Dissolved			99.5		%		80-120	07-JUN-22
Arsenic (As)-Dissolved			101.5		%		80-120	07-JUN-22
Barium (Ba)-Dissolved			106.4		%		80-120	07-JUN-22
Beryllium (Be)-Dissolved			118.5		%		80-120	07-JUN-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5795695								
WG3736314-2 LCS								
Bismuth (Bi)-Dissolved			104.2		%		80-120	07-JUN-22
Boron (B)-Dissolved			114.4		%		80-120	07-JUN-22
Cadmium (Cd)-Dissolved			102.0		%		80-120	07-JUN-22
Calcium (Ca)-Dissolved			107.5		%		80-120	07-JUN-22
Cesium (Cs)-Dissolved			99.8		%		80-120	07-JUN-22
Chromium (Cr)-Dissolved			104.7		%		80-120	07-JUN-22
Cobalt (Co)-Dissolved			104.4		%		80-120	07-JUN-22
Copper (Cu)-Dissolved			102.7		%		80-120	07-JUN-22
Iron (Fe)-Dissolved			98.6		%		80-120	07-JUN-22
Lead (Pb)-Dissolved			100.9		%		80-120	07-JUN-22
Lithium (Li)-Dissolved			117.8		%		80-120	07-JUN-22
Magnesium (Mg)-Dissolved			107.4		%		80-120	07-JUN-22
Manganese (Mn)-Dissolved			104.1		%		80-120	07-JUN-22
Molybdenum (Mo)-Dissolved			104.8		%		80-120	07-JUN-22
Nickel (Ni)-Dissolved			101.8		%		80-120	07-JUN-22
Phosphorus (P)-Dissolved			115.9		%		80-120	07-JUN-22
Potassium (K)-Dissolved			105.8		%		80-120	07-JUN-22
Rubidium (Rb)-Dissolved			104.1		%		80-120	07-JUN-22
Selenium (Se)-Dissolved			97.1		%		80-120	07-JUN-22
Silicon (Si)-Dissolved			111.6		%		80-120	07-JUN-22
Silver (Ag)-Dissolved			103.4		%		80-120	07-JUN-22
Sodium (Na)-Dissolved			109.9		%		80-120	07-JUN-22
Strontium (Sr)-Dissolved			101.6		%		80-120	07-JUN-22
Sulfur (S)-Dissolved			109.6		%		80-120	07-JUN-22
Tellurium (Te)-Dissolved			102.0		%		80-120	07-JUN-22
Thallium (Tl)-Dissolved			103.1		%		80-120	07-JUN-22
Thorium (Th)-Dissolved			101.6		%		80-120	07-JUN-22
Tin (Sn)-Dissolved			100.9		%		80-120	07-JUN-22
Titanium (Ti)-Dissolved			104.9		%		80-120	07-JUN-22
Tungsten (W)-Dissolved			98.2		%		80-120	07-JUN-22
Uranium (U)-Dissolved			103.0		%		80-120	07-JUN-22
Vanadium (V)-Dissolved			104.2		%		80-120	07-JUN-22
Zinc (Zn)-Dissolved			104.4		%		80-120	07-JUN-22
Zirconium (Zr)-Dissolved			99.5		%		80-120	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5795695								
WG3736313-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-JUN-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-JUN-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	07-JUN-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-JUN-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-JUN-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-JUN-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-JUN-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-JUN-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	07-JUN-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-JUN-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-JUN-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-JUN-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	07-JUN-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5795695								
WG3736313-1 MB								
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-JUN-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-JUN-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-22
WG3736314-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-JUN-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-JUN-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	07-JUN-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-JUN-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-JUN-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-JUN-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-JUN-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-JUN-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	07-JUN-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-JUN-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-JUN-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-JUN-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5795695								
WG3736314-1 MB								
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	07-JUN-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-JUN-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-JUN-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-JUN-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-22
WG3736314-5 MS		**L2711813-5**						
Aluminum (Al)-Dissolved			94.8		%		70-130	07-JUN-22
Antimony (Sb)-Dissolved			90.5		%		70-130	07-JUN-22
Arsenic (As)-Dissolved			94.0		%		70-130	07-JUN-22
Barium (Ba)-Dissolved			94.1		%		70-130	07-JUN-22
Beryllium (Be)-Dissolved			101.0		%		70-130	07-JUN-22
Bismuth (Bi)-Dissolved			88.8		%		70-130	07-JUN-22
Boron (B)-Dissolved			95.3		%		70-130	07-JUN-22
Cadmium (Cd)-Dissolved			93.2		%		70-130	07-JUN-22
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	07-JUN-22
Cesium (Cs)-Dissolved			92.8		%		70-130	07-JUN-22
Chromium (Cr)-Dissolved			94.6		%		70-130	07-JUN-22
Cobalt (Co)-Dissolved			94.9		%		70-130	07-JUN-22
Copper (Cu)-Dissolved			93.0		%		70-130	07-JUN-22
Iron (Fe)-Dissolved			90.5		%		70-130	07-JUN-22
Lead (Pb)-Dissolved			90.0		%		70-130	07-JUN-22
Magnesium (Mg)-Dissolved			93.1		%		70-130	07-JUN-22
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	07-JUN-22
Molybdenum (Mo)-Dissolved			95.0		%		70-130	07-JUN-22
Nickel (Ni)-Dissolved			93.4		%		70-130	07-JUN-22
Phosphorus (P)-Dissolved			99.1		%		70-130	07-JUN-22
Potassium (K)-Dissolved			96.8		%		70-130	07-JUN-22
Rubidium (Rb)-Dissolved			94.7		%		70-130	07-JUN-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5795695								
WG3736314-5 MS		**L2711813-5**						
Selenium (Se)-Dissolved			90.5		%		70-130	07-JUN-22
Silicon (Si)-Dissolved			94.1		%		70-130	07-JUN-22
Silver (Ag)-Dissolved			94.2		%		70-130	07-JUN-22
Sodium (Na)-Dissolved			105.5		%		70-130	07-JUN-22
Strontium (Sr)-Dissolved			99.9		%		70-130	07-JUN-22
Sulfur (S)-Dissolved			97.1		%		70-130	07-JUN-22
Tellurium (Te)-Dissolved			95.1		%		70-130	07-JUN-22
Thallium (Tl)-Dissolved			88.5		%		70-130	07-JUN-22
Thorium (Th)-Dissolved			96.4		%		70-130	07-JUN-22
Tin (Sn)-Dissolved			90.7		%		70-130	07-JUN-22
Titanium (Ti)-Dissolved			94.9		%		70-130	07-JUN-22
Tungsten (W)-Dissolved			86.8		%		70-130	07-JUN-22
Uranium (U)-Dissolved			90.9		%		70-130	07-JUN-22
Vanadium (V)-Dissolved			95.3		%		70-130	07-JUN-22
Zinc (Zn)-Dissolved			95.5		%		70-130	07-JUN-22
Zirconium (Zr)-Dissolved			95.8		%		70-130	07-JUN-22
MET-T-CCMS-WP	**Water**							
Batch R5795695								
WG3736307-2 LCS								
Aluminum (Al)-Total			104.3		%		80-120	07-JUN-22
Aluminum (Al)-Total			104.3		%		80-120	07-JUN-22
Antimony (Sb)-Total			104.7		%		80-120	07-JUN-22
Antimony (Sb)-Total			104.7		%		80-120	07-JUN-22
Arsenic (As)-Total			100.3		%		80-120	07-JUN-22
Arsenic (As)-Total			100.3		%		80-120	07-JUN-22
Barium (Ba)-Total			101.1		%		80-120	07-JUN-22
Barium (Ba)-Total			101.1		%		80-120	07-JUN-22
Beryllium (Be)-Total			96.7		%		80-120	07-JUN-22
Beryllium (Be)-Total			96.7		%		80-120	07-JUN-22
Bismuth (Bi)-Total			101.3		%		80-120	07-JUN-22
Bismuth (Bi)-Total			101.3		%		80-120	07-JUN-22
Boron (B)-Total			87.8		%		80-120	07-JUN-22
Boron (B)-Total			87.8		%		80-120	07-JUN-22
Cadmium (Cd)-Total			103.1		%		80-120	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5795695								
WG3736307-2 LCS								
Cadmium (Cd)-Total			103.1		%		80-120	07-JUN-22
Calcium (Ca)-Total			97.9		%		80-120	07-JUN-22
Calcium (Ca)-Total			97.9		%		80-120	07-JUN-22
Cesium (Cs)-Total			96.7		%		80-120	07-JUN-22
Cesium (Cs)-Total			96.7		%		80-120	07-JUN-22
Chromium (Cr)-Total			101.7		%		80-120	07-JUN-22
Chromium (Cr)-Total			101.7		%		80-120	07-JUN-22
Cobalt (Co)-Total			103.7		%		80-120	07-JUN-22
Cobalt (Co)-Total			103.7		%		80-120	07-JUN-22
Copper (Cu)-Total			101.0		%		80-120	07-JUN-22
Copper (Cu)-Total			101.0		%		80-120	07-JUN-22
Iron (Fe)-Total			99.9		%		80-120	07-JUN-22
Iron (Fe)-Total			99.9		%		80-120	07-JUN-22
Lead (Pb)-Total			102.9		%		80-120	07-JUN-22
Lead (Pb)-Total			102.9		%		80-120	07-JUN-22
Lithium (Li)-Total			86.5		%		80-120	07-JUN-22
Lithium (Li)-Total			86.5		%		80-120	07-JUN-22
Magnesium (Mg)-Total			102.9		%		80-120	07-JUN-22
Magnesium (Mg)-Total			102.9		%		80-120	07-JUN-22
Manganese (Mn)-Total			97.3		%		80-120	07-JUN-22
Manganese (Mn)-Total			97.3		%		80-120	07-JUN-22
Molybdenum (Mo)-Total			102.2		%		80-120	07-JUN-22
Molybdenum (Mo)-Total			102.2		%		80-120	07-JUN-22
Nickel (Ni)-Total			101.5		%		80-120	07-JUN-22
Nickel (Ni)-Total			101.5		%		80-120	07-JUN-22
Potassium (K)-Total			100.6		%		80-120	07-JUN-22
Potassium (K)-Total			100.6		%		80-120	07-JUN-22
Phosphorus (P)-Total			98.5		%		80-120	07-JUN-22
Phosphorus (P)-Total			98.5		%		80-120	07-JUN-22
Rubidium (Rb)-Total			102.5		%		80-120	07-JUN-22
Rubidium (Rb)-Total			102.5		%		80-120	07-JUN-22
Selenium (Se)-Total			102.9		%		80-120	07-JUN-22
Selenium (Se)-Total			102.9		%		80-120	07-JUN-22
Silicon (Si)-Total			98.0		%		80-120	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5795695								
WG3736307-2 LCS								
Silicon (Si)-Total			98.0		%		80-120	07-JUN-22
Silver (Ag)-Total			101.3		%		80-120	07-JUN-22
Silver (Ag)-Total			101.3		%		80-120	07-JUN-22
Sodium (Na)-Total			107.2		%		80-120	07-JUN-22
Sodium (Na)-Total			107.2		%		80-120	07-JUN-22
Strontium (Sr)-Total			100.2		%		80-120	07-JUN-22
Strontium (Sr)-Total			100.2		%		80-120	07-JUN-22
Sulfur (S)-Total			107.4		%		80-120	07-JUN-22
Sulfur (S)-Total			107.4		%		80-120	07-JUN-22
Tellurium (Te)-Total			100.0		%		80-120	07-JUN-22
Tellurium (Te)-Total			100.0		%		80-120	07-JUN-22
Thallium (Tl)-Total			103.2		%		80-120	07-JUN-22
Thallium (Tl)-Total			103.2		%		80-120	07-JUN-22
Thorium (Th)-Total			100.2		%		80-120	07-JUN-22
Thorium (Th)-Total			100.2		%		80-120	07-JUN-22
Tin (Sn)-Total			100.8		%		80-120	07-JUN-22
Tin (Sn)-Total			100.8		%		80-120	07-JUN-22
Titanium (Ti)-Total			97.3		%		80-120	07-JUN-22
Titanium (Ti)-Total			97.3		%		80-120	07-JUN-22
Tungsten (W)-Total			95.9		%		80-120	07-JUN-22
Tungsten (W)-Total			95.9		%		80-120	07-JUN-22
Uranium (U)-Total			97.7		%		80-120	07-JUN-22
Uranium (U)-Total			97.7		%		80-120	07-JUN-22
Vanadium (V)-Total			102.2		%		80-120	07-JUN-22
Vanadium (V)-Total			102.2		%		80-120	07-JUN-22
Zinc (Zn)-Total			99.6		%		80-120	07-JUN-22
Zinc (Zn)-Total			99.6		%		80-120	07-JUN-22
Zirconium (Zr)-Total			95.1		%		80-120	07-JUN-22
Zirconium (Zr)-Total			95.1		%		80-120	07-JUN-22
WG3736309-2 LCS								
Aluminum (Al)-Total			98.2		%		80-120	07-JUN-22
Antimony (Sb)-Total			106.3		%		80-120	07-JUN-22
Arsenic (As)-Total			99.0		%		80-120	07-JUN-22
Barium (Ba)-Total			101.8		%		80-120	07-JUN-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5795695								
WG3736309-2 LCS								
Beryllium (Be)-Total			91.6		%		80-120	07-JUN-22
Bismuth (Bi)-Total			100.1		%		80-120	07-JUN-22
Boron (B)-Total			90.2		%		80-120	07-JUN-22
Cadmium (Cd)-Total			102.4		%		80-120	07-JUN-22
Calcium (Ca)-Total			96.6		%		80-120	07-JUN-22
Cesium (Cs)-Total			99.6		%		80-120	07-JUN-22
Chromium (Cr)-Total			99.1		%		80-120	07-JUN-22
Cobalt (Co)-Total			101.0		%		80-120	07-JUN-22
Copper (Cu)-Total			100.5		%		80-120	07-JUN-22
Iron (Fe)-Total			97.5		%		80-120	07-JUN-22
Lead (Pb)-Total			99.4		%		80-120	07-JUN-22
Lithium (Li)-Total			89.0		%		80-120	07-JUN-22
Magnesium (Mg)-Total			99.3		%		80-120	07-JUN-22
Manganese (Mn)-Total			98.8		%		80-120	07-JUN-22
Molybdenum (Mo)-Total			102.7		%		80-120	07-JUN-22
Nickel (Ni)-Total			99.6		%		80-120	07-JUN-22
Potassium (K)-Total			94.0		%		80-120	07-JUN-22
Phosphorus (P)-Total			95.5		%		80-120	07-JUN-22
Rubidium (Rb)-Total			97.5		%		80-120	07-JUN-22
Selenium (Se)-Total			100.9		%		80-120	07-JUN-22
Silicon (Si)-Total			94.1		%		80-120	07-JUN-22
Silver (Ag)-Total			101.6		%		80-120	07-JUN-22
Sodium (Na)-Total			123.5	MES	%		80-120	07-JUN-22
Strontium (Sr)-Total			100.7		%		80-120	07-JUN-22
Sulfur (S)-Total			98.8		%		80-120	07-JUN-22
Tellurium (Te)-Total			100.9		%		80-120	07-JUN-22
Thallium (Tl)-Total			102.1		%		80-120	07-JUN-22
Thorium (Th)-Total			95.6		%		80-120	07-JUN-22
Tin (Sn)-Total			100.8		%		80-120	07-JUN-22
Titanium (Ti)-Total			93.9		%		80-120	07-JUN-22
Tungsten (W)-Total			100.3		%		80-120	07-JUN-22
Uranium (U)-Total			98.8		%		80-120	07-JUN-22
Vanadium (V)-Total			101.3		%		80-120	07-JUN-22
Zinc (Zn)-Total			98.6		%		80-120	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5795695								
WG3736309-2 LCS								
Zirconium (Zr)-Total			98.0		%		80-120	07-JUN-22
WG3736307-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	07-JUN-22
Aluminum (Al)-Total			<0.0030		mg/L		0.003	07-JUN-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Boron (B)-Total			<0.010		mg/L		0.01	07-JUN-22
Boron (B)-Total			<0.010		mg/L		0.01	07-JUN-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	07-JUN-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	07-JUN-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	07-JUN-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	07-JUN-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	07-JUN-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	07-JUN-22
Iron (Fe)-Total			<0.010		mg/L		0.01	07-JUN-22
Iron (Fe)-Total			<0.010		mg/L		0.01	07-JUN-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	07-JUN-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5795695								
WG3736307-1 MB								
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	07-JUN-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	07-JUN-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	07-JUN-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	07-JUN-22
Potassium (K)-Total			<0.050		mg/L		0.05	07-JUN-22
Potassium (K)-Total			<0.050		mg/L		0.05	07-JUN-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	07-JUN-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	07-JUN-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Silicon (Si)-Total			<0.10		mg/L		0.1	07-JUN-22
Silicon (Si)-Total			<0.10		mg/L		0.1	07-JUN-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Sodium (Na)-Total			<0.050		mg/L		0.05	07-JUN-22
Sodium (Na)-Total			<0.050		mg/L		0.05	07-JUN-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Sulfur (S)-Total			<0.50		mg/L		0.5	07-JUN-22
Sulfur (S)-Total			<0.50		mg/L		0.5	07-JUN-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5795695								
WG3736307-1 MB								
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	07-JUN-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	07-JUN-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	07-JUN-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	07-JUN-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	07-JUN-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	07-JUN-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	07-JUN-22
WG3736309-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	07-JUN-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Boron (B)-Total			<0.010		mg/L		0.01	07-JUN-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	07-JUN-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	07-JUN-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	07-JUN-22
Iron (Fe)-Total			<0.010		mg/L		0.01	07-JUN-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	07-JUN-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	07-JUN-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	07-JUN-22
Potassium (K)-Total			<0.050		mg/L		0.05	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5795695								
WG3736309-1 MB								
Phosphorus (P)-Total			<0.030		mg/L		0.03	07-JUN-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Silicon (Si)-Total			<0.10		mg/L		0.1	07-JUN-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Sodium (Na)-Total			<0.050		mg/L		0.05	07-JUN-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Sulfur (S)-Total			<0.50		mg/L		0.5	07-JUN-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	07-JUN-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	07-JUN-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	07-JUN-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	07-JUN-22
N-TOTKJ-WP	**Water**							
Batch R5795675								
WG3736100-7 DUP		**L2711813-11**						
Total Kjeldahl Nitrogen		0.33	0.34		mg/L	0.8	20	08-JUN-22
WG3736100-2 LCS								
Total Kjeldahl Nitrogen			98.4		%		75-125	08-JUN-22
WG3736100-6 LCS								
Total Kjeldahl Nitrogen			93.5		%		75-125	08-JUN-22
WG3736100-1 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	08-JUN-22
WG3736100-5 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	08-JUN-22
WG3736100-8 MS		**L2711813-11**						
Total Kjeldahl Nitrogen			102.8		%		70-130	08-JUN-22
NH3-COL-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-COL-WP	**Water**							
Batch R5796520								
WG3738200-22 LCS								
Ammonia, Total (as N)			103.1		%		85-115	10-JUN-22
WG3738200-6 LCS								
Ammonia, Total (as N)			100.8		%		85-115	09-JUN-22
WG3738200-21 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	10-JUN-22
WG3738200-5 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	09-JUN-22
Batch R5800518								
WG3739853-2 LCS								
Ammonia, Total (as N)			102.3		%		85-115	14-JUN-22
WG3739853-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	14-JUN-22
NO2-L-IC-N-WP	**Water**							
Batch R5794276								
WG3734788-14 LCS								
Nitrite (as N)			99.7		%		90-110	02-JUN-22
WG3734788-13 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	02-JUN-22
Batch R5797901								
WG3735270-7 DUP		**L2711813-2**						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-JUN-22
WG3735270-2 LCS								
Nitrite (as N)			100.3		%		90-110	03-JUN-22
WG3735270-6 LCS								
Nitrite (as N)			101.4		%		90-110	03-JUN-22
WG3735270-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	03-JUN-22
WG3735270-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	03-JUN-22
WG3735270-8 MS		**L2711813-2**						
Nitrite (as N)			104.3		%		75-125	03-JUN-22
NO3-L-IC-N-WP	**Water**							
Batch R5794276								
WG3734788-14 LCS								
Nitrate (as N)			99.3		%		90-110	02-JUN-22
WG3734788-13 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	02-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-WP	**Water**							
Batch R5797901								
WG3735270-7 DUP		**L2711813-2**						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-JUN-22
WG3735270-2 LCS								
Nitrate (as N)			98.8		%		90-110	03-JUN-22
WG3735270-6 LCS								
Nitrate (as N)			98.1		%		90-110	03-JUN-22
WG3735270-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	03-JUN-22
WG3735270-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	03-JUN-22
WG3735270-8 MS		**L2711813-2**						
Nitrate (as N)			103.4		%		75-125	03-JUN-22
P-T-COL-WP	**Water**							
Batch R5806244								
WG3742565-3 DUP		**L2711813-1**						
Phosphorus (P)-Total		0.0285	0.0279		mg/L	2.0	20	23-JUN-22
WG3742565-2 LCS								
Phosphorus (P)-Total			95.1		%		80-120	23-JUN-22
WG3742565-1 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	23-JUN-22
WG3742565-4 MS		**L2711813-2**						
Phosphorus (P)-Total			97.7		%		70-130	23-JUN-22
Batch R5819707								
WG3747562-2 LCS								
Phosphorus (P)-Total			106.5		%		80-120	08-JUL-22
WG3747562-1 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	08-JUL-22
P-T-L-COL-WP	**Water**							
Batch R5811738								
WG3745475-2 LCS								
Phosphorus (P)-Total			84.6		%		80-120	30-JUN-22
WG3745475-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	30-JUN-22
Batch R5828269								
WG3750243-3 DUP		**L2711813-18**						
Phosphorus (P)-Total		0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-JUL-22
WG3750243-2 LCS								
Phosphorus (P)-Total			87.5		%		80-120	22-JUL-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-L-COL-WP	**Water**							
Batch R5828269								
WG3750243-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	22-JUL-22
SO4-IC-N-WP	**Water**							
Batch R5794276								
WG3734788-14 LCS								
Sulfate (SO4)			100.3		%		90-110	02-JUN-22
WG3734788-13 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	02-JUN-22
Batch R5797901								
WG3735270-7 DUP		**L2711813-2**						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	03-JUN-22
WG3735270-2 LCS								
Sulfate (SO4)			99.3		%		90-110	03-JUN-22
WG3735270-6 LCS								
Sulfate (SO4)			99.3		%		90-110	03-JUN-22
WG3735270-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	03-JUN-22
WG3735270-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	03-JUN-22
WG3735270-8 MS		**L2711813-2**						
Sulfate (SO4)			104.2		%		75-125	03-JUN-22
SOLIDS-TOTSUS-LR-WP	**Water**							
Batch R5794617								
WG3734802-2 LCS								
Total Suspended Solids			90.8		%		85-115	03-JUN-22
WG3734802-1 MB								
Total Suspended Solids			<1.0		mg/L		1	03-JUN-22
Batch R5795143								
WG3735086-2 LCS								
Total Suspended Solids			88.2		%		85-115	06-JUN-22
WG3735086-5 LCS								
Total Suspended Solids			93.5		%		85-115	06-JUN-22
WG3735086-1 MB								
Total Suspended Solids			<1.0		mg/L		1	06-JUN-22
WG3735086-4 MB								
Total Suspended Solids			<1.0		mg/L		1	06-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TOTSUS-LR-WP	**Water**							
Batch R5796731								
WG3736417-2 LCS								
Total Suspended Solids			100.2		%		85-115	07-JUN-22
WG3736417-1 MB								
Total Suspended Solids			<1.0		mg/L		1	07-JUN-22

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Anions and Nutrients							
Acidity							
	17	31-MAY-22 14:09	16-JUN-22 11:30	14	16	days	EHT
	18	31-MAY-22 15:29	16-JUN-22 11:30	14	16	days	EHT
	19	31-MAY-22 08:44	16-JUN-22 11:30	14	16	days	EHT
Nitrate in Water by IC (Low Level)							
	1	28-MAY-22 09:21	02-JUN-22 16:00	3	5	days	EHTR
	2	28-MAY-22 10:30	03-JUN-22 13:00	3	6	days	EHTR
	3	28-MAY-22 11:36	03-JUN-22 13:00	3	6	days	EHTR
	4	28-MAY-22 12:16	03-JUN-22 13:00	3	6	days	EHTR
	5	28-MAY-22 12:44	02-JUN-22 16:00	3	5	days	EHTR
	6	28-MAY-22	02-JUN-22 16:00	3	5	days	EHTR
	7	29-MAY-22 09:42	03-JUN-22 13:00	3	5	days	EHTR
	8	29-MAY-22 10:13	03-JUN-22 13:00	3	5	days	EHTR
	9	29-MAY-22 11:13	03-JUN-22 13:00	3	5	days	EHTR
	10	29-MAY-22 11:33	02-JUN-22 16:00	3	4	days	EHTR
	11	29-MAY-22 12:51	02-JUN-22 16:00	3	4	days	EHTR
	12	29-MAY-22 14:49	02-JUN-22 16:00	3	4	days	EHTR
	13	29-MAY-22 15:22	02-JUN-22 16:00	3	4	days	EHTR
	15	30-MAY-22 16:51	03-JUN-22 13:00	3	4	days	EHTL
Nitrite in Water by IC (Low Level)							
	1	28-MAY-22 09:21	02-JUN-22 16:00	3	5	days	EHTR
	2	28-MAY-22 10:30	03-JUN-22 13:00	3	6	days	EHTR
	3	28-MAY-22 11:36	03-JUN-22 13:00	3	6	days	EHTR
	4	28-MAY-22 12:16	03-JUN-22 13:00	3	6	days	EHTR
	5	28-MAY-22 12:44	02-JUN-22 16:00	3	5	days	EHTR
	6	28-MAY-22	02-JUN-22 16:00	3	5	days	EHTR
	7	29-MAY-22 09:42	03-JUN-22 13:00	3	5	days	EHTR
	8	29-MAY-22 10:13	03-JUN-22 13:00	3	5	days	EHTR
	9	29-MAY-22 11:13	03-JUN-22 13:00	3	5	days	EHTR
	10	29-MAY-22 11:33	02-JUN-22 16:00	3	4	days	EHTR
	11	29-MAY-22 12:51	02-JUN-22 16:00	3	4	days	EHTR
	12	29-MAY-22 14:49	02-JUN-22 16:00	3	4	days	EHTR
	13	29-MAY-22 15:22	02-JUN-22 16:00	3	4	days	EHTR
	15	30-MAY-22 16:51	03-JUN-22 13:00	3	4	days	EHTL
Phosphorus, Total							
	18	31-MAY-22 15:29	08-JUL-22 16:30	28	38	days	EHT
Phosphorus, Total							
	6	28-MAY-22	30-JUN-22 15:55	28	33	days	EHT
	18	31-MAY-22 15:29	22-JUL-22 11:45	28	52	days	EHT
Cyanides							
Low Level Free Cyanide in water by CFA							
	3	28-MAY-22 11:36	27-JUN-22 00:00	14	30	days	EHT
	14	30-MAY-22 16:07	16-JUN-22 14:00	14	17	days	EHT
	15	30-MAY-22 16:51	16-JUN-22 14:00	14	17	days	EHT
Low Level Total Cyanide in water by CFA							
	3	28-MAY-22 11:36	27-JUN-22 00:00	14	30	days	EHT
	14	30-MAY-22 16:07	16-JUN-22 14:00	14	17	days	EHT
	15	30-MAY-22 16:51	16-JUN-22 14:00	14	17	days	EHT
Low level WAD Cyanide in water by CFA							
	3	28-MAY-22 11:36	27-JUN-22 00:00	14	30	days	EHT
	14	30-MAY-22 16:07	16-JUN-22 14:00	14	17	days	EHT
	15	30-MAY-22 16:51	16-JUN-22 14:00	14	17	days	EHT
Total Metals							
Total Mercury in Water by CVAFS (Ultra)							

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Total Metals							
Total Mercury in Water by CVAFS (Ultra)							
	1	28-MAY-22 09:21	02-JUL-22 15:41	28	35	days	EHT
	2	28-MAY-22 10:30	02-JUL-22 15:41	28	35	days	EHT
	3	28-MAY-22 11:36	02-JUL-22 15:41	28	35	days	EHT
	4	28-MAY-22 12:16	02-JUL-22 15:41	28	35	days	EHT
	5	28-MAY-22 12:44	02-JUL-22 15:41	28	35	days	EHT
	7	29-MAY-22 09:42	02-JUL-22 15:41	28	34	days	EHT
	8	29-MAY-22 10:13	02-JUL-22 15:41	28	34	days	EHT
	9	29-MAY-22 11:13	02-JUL-22 15:41	28	34	days	EHT
	10	29-MAY-22 11:33	02-JUL-22 15:41	28	34	days	EHT
	11	29-MAY-22 12:51	02-JUL-22 15:41	28	34	days	EHT
	12	29-MAY-22 14:49	02-JUL-22 15:41	28	34	days	EHT
	13	29-MAY-22 15:22	02-JUL-22 15:41	28	34	days	EHT
	14	30-MAY-22 16:07	02-JUL-22 15:41	28	33	days	EHT
	15	30-MAY-22 16:51	02-JUL-22 15:41	28	33	days	EHT
	16	31-MAY-22 13:10	02-JUL-22 15:41	28	32	days	EHT
	17	31-MAY-22 14:09	02-JUL-22 15:41	28	32	days	EHT
	18	31-MAY-22 15:29	02-JUL-22 15:41	28	32	days	EHT
	19	31-MAY-22 08:44	02-JUL-22 15:41	28	32	days	EHT
Dissolved Metals							
Diss. Mercury in Water by CVAFS (Ultra)							
	1	28-MAY-22 09:21	02-JUL-22 09:00	28	35	days	EHT
	2	28-MAY-22 10:30	02-JUL-22 09:00	28	35	days	EHT
	3	28-MAY-22 11:36	02-JUL-22 09:00	28	35	days	EHT
	4	28-MAY-22 12:16	02-JUL-22 09:00	28	35	days	EHT
	5	28-MAY-22 12:44	02-JUL-22 09:00	28	35	days	EHT
	7	29-MAY-22 09:42	02-JUL-22 09:00	28	34	days	EHT
	8	29-MAY-22 10:13	02-JUL-22 09:00	28	34	days	EHT
	9	29-MAY-22 11:13	02-JUL-22 09:00	28	34	days	EHT
	10	29-MAY-22 11:33	02-JUL-22 09:00	28	34	days	EHT
	11	29-MAY-22 12:51	02-JUL-22 09:00	28	34	days	EHT
	12	29-MAY-22 14:49	02-JUL-22 09:00	28	34	days	EHT
	13	29-MAY-22 15:22	02-JUL-22 09:00	28	34	days	EHT
	14	30-MAY-22 16:07	02-JUL-22 09:00	28	33	days	EHT
	15	30-MAY-22 16:51	02-JUL-22 09:00	28	33	days	EHT
	16	31-MAY-22 13:10	02-JUL-22 09:00	28	32	days	EHT
	17	31-MAY-22 14:09	02-JUL-22 09:00	28	32	days	EHT
	18	31-MAY-22 15:29	02-JUL-22 09:00	28	32	days	EHT
	19	31-MAY-22 08:44	02-JUL-22 09:00	28	32	days	EHT
Speciated Metals							
Chromium +6							
	3	28-MAY-22 11:36	28-JUN-22 00:00	28	31	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2711813 were received on 02-JUN-22 12:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the

US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chai[illegible]m

COC Number: 22 -

Page 1 of 4

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L2711813-COFC

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Project Information	
ALS Account # / Quote #:	Q88846
Job #:	ALAMOS
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	

Select Report Format:	☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Karen.Mathers@Stantec.com
Email 2	
Email 3	

Invoice Recipients

Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: Judy Dalmaijer	Sampler: BS

Turnaround Time (TAT) Requested

- ☑ Routine [R] if received by 3pm M-F - no surcharges apply
- ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
- ☐ 3 day [P3] if received by 3pm M-F - 25% rush-surcharge minimum
- ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
- ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
- ☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Analysis Request

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	HG-D-CVAA-WP	HG-T-CVAA-WP	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	ACY-TITR-TB	CN-TL, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
1	AQM74	28-05-22	0921	W	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
2	AQM73	"	1030	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
3	AQM71	"	1136	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
4	AQM72	"	1216	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
5	QC-01	"	1244	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
6	Trip Blank	—	—	W	10																	
7	AQF41	29-05-22	0942	W	12																	
8	AQF46	"	1013	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
9	AQF75	"	1113	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
10	AQF70	"	1133	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
11	AQF38	"	1251	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
12	AQF43	"	1449	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

dissolved metals field filtered + preserved, dissolved mercury + nutrients preserved

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
							7.9

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
B.Ghad	31-05-22	1430

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
	JUN 02 2022	1200

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

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L2711813-COFC

...est Form

COC Number: 22 -

Page 2 of 4

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Karen.Mathers@Stantec.com

Email 2:

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax:

Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	Q88846
Job #:	ALAMOS
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	HG-D-CVAA-WP	HG-T-CVAA-WP	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	ACY-TITR-TB	CN-TL, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
13	AQF44	29-05-22	1523	W	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
14	AQF43	30-05-22	1607		12																	
15	AQF40		1651		12																	
16	AQM38	31-05-22	1310		12																	
17	AQM39C		1409		12																	
18	Field Blank		1526		12																	
19	AQF45S	31-05-22	0844	W	12																	
	~~AQF46~~																					

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

dissolved metals field filtered + preserved; dissolved mercury + nutrients field filtered

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
							7.9

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
B. Lynard	31-05-22	

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
	JUN 02 2022	

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized** DW COC form.

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L2711813-COFC

Form

COC Number: 22 -

Page 3 of 4

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Report Recipients

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: Karen.Mathers@Stantec.com
Email 2:
Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax:
Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 1 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F- 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q88846	AFE/Cost Center:	PO#:
Job #:	ALAMOS	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (ALS use only):		ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	① ALK-P-EC-WP	② AMMONIA-F-CL-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	③ HG-D-CVAA-WP	HG-T-CVAA-WP	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	ACY-TITR-TB	CN-TL, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
1	AQM74	28.05.22	0921	W	12	✓	✓		✓													
2	AQM73	"	1030	"	12																	
3	AQM71	"	1136	"	12																	
4	AQM72	"	1216	"	12																	
5	QC-01	"	1244	"	12																	
6	Trip Blank	-	-	"	12																	
7	AQF41	29.05.22	0942	"	12																	
8	AQF46	"	1013	"	12																	
9	AQF75	"	1113	"	12																	
10	AQF70	"	1133	"	12																	
11	AQF38	"	1251	"	12																	
12	AQF43	"	1449	"	12																	

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

① HG-D-U-CVAF-VA
② HG-T-U-CVAF-VA
③ MEHG-T-GCAF-VA

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: B.Boyd	Date: 31.05.22	Time: 1630	Received by:	Date: JUN 02 2022	Time: 1200	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Chain of Custody

L2711813-COFC

COC Number: 22 -

Page 4 of 4

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Report To	Contact and company name below will appear on the final report	Report Format / Recipients	Turnaround Time (TAT) Requested
Company:	Stantec Consulting	Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)	☑ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Karen Mathers	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
Phone:	204-928-7621	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
Street:	500 - 311 Portage Ave	Email 1 or Fax Karen.Mathers@Stantec.com	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
City/Province:	Winnipeg, MB	Email 2	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.
Postal Code:	R3B 2B9	Email 3	Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.
Invoice To	Same as Report To ☐ YES ☑ NO	**Invoice Recipients**	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	For all tests with rush TATs requested, please contact your AM to confirm availability.
Company:	Alamos Gold	Email 1 or Fax	
Contact:		Email 2	

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q88846	AFE/Cost Center:	PO#
Job #:	ALAMOS	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (ALS use only):		ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	① ~~AU-GRG-WP~~	② ~~AU-ICPMS-TOT-WP~~	C-DOC-HTC-WP, C-TOC-HTC-WP	③ ~~HG-DISS-VA-WP~~	HG-T-CVAA-WP	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	ACY-TITR-TB	CN-TL, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
32	AQF44	29.05.22	1522		12	✓	✓		✓													
30	AQF42	30.05.22	1607		12	|	|		|												
4	AQF40	"	1651		12	|	|		|												
6	AQM38	31.05.22	1310		12	|	|		|												
6	AQM39C	"	1409		12	|	|		|												
35	Field Blank	"	1526		12	|	|		|												
38	AQF45S	31.05.22	0844		12	↓	↓		↓													

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	① HG-D-U - CVAF-VA
Are samples for human consumption/ use? ☐ YES ☐ NO	② HG-T-U - CVAF-VA
	③ MEHG-T-GCAF-VA

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
							9.9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
B. Lloyd	31/05/22	1630		JUN 02 2022				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Alamos Gold Inc.
ATTN: KAREN MATHERS
C/O Stantec Consulting
500 - 311 Portage Avenue
Winnipeg MB R3B 2B9

Date Received: 02-JUN-22
Report Date: 30-JUN-22 15:56 (MT)
Version: FINAL

Client Phone: 204-924-5735

Certificate of Analysis

Lab Work Order #: L2711833

Project P.O. #:	NOT SUBMITTED
Job Reference:	ALAMOS - 111473003
C of C Numbers:	
Legal Site Desc:	WQQ

Oluwaseun Osasona
Project Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2711833-1	L2711833-2	L2711833-3	L2711833-4	L2711833-5
Description	W	W	W	W	W
Sampled Date	30-MAY-22	30-MAY-22	30-MAY-22	30-MAY-22	30-MAY-22
Sampled Time	12:34	13:29	13:39	13:54	14:13
Client ID	AQF6-0	AQF6-2.5	AQF6-5	AQF6-10	AQF6-15
Grouping / **Analyte**					
WATER					
Physical Tests pH (pH units)	7.92	7.91	7.88	7.91	7.86
Total Suspended Solids (mg/L)	1.0	1.2	1.4	1.3	1.6
Anions and Nutrients Alkalinity, Total (as CaCO3) (mg/L)	139	138	141	140	144
Ammonia, Total (as N) (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Bicarbonate (HCO3) (mg/L)	169	168	172	171	176
Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
Chloride (Cl) (mg/L)	2.92	2.95	3.08	3.05	3.10
Fluoride (F) (mg/L)	0.088	0.093	0.090	0.088	0.094
Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
Nitrate and Nitrite as N (mg/L)	0.111	0.112	0.115	0.115	0.117
Nitrate (as N) (mg/L)	0.111	0.112	0.115	0.115	0.117
Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total (mg/L)	0.0076	0.0066	0.0056	0.0057	0.0083
Sulfate (SO4) (mg/L)	115	119	121	120	124
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	7.12	7.89	7.05	7.12	7.20
Total Metals Aluminum (Al)-Total (mg/L)	0.0142	0.0112	0.0165	0.0112	0.0117
Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	0.00011	<0.00010	<0.00010
Arsenic (As)-Total (mg/L)	0.00130	0.00129	0.00129	0.00131	0.00127
Barium (Ba)-Total (mg/L)	0.0195	0.0193	0.0201	0.0205	0.0204
Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total (mg/L)	0.028	0.028	0.034	0.028	0.027
Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total (mg/L)	59.7	60.7	58.4	59.5	60.1
Cesium (Cs)-Total (mg/L)	0.000195	0.000196	0.000196	0.000204	0.000193
Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	0.00124	<0.00010	<0.00010
Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total (mg/L)	0.00068	<0.00050	0.00060	<0.00050	<0.00050
Iron (Fe)-Total (mg/L)	0.085	0.083	0.109	0.079	0.085
Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total (mg/L)	0.0034	0.0034	0.0040	0.0034	0.0032
Magnesium (Mg)-Total (mg/L)	19.2	19.7	19.0	20.2	20.8
Manganese (Mn)-Total (mg/L)	0.283	0.288	0.303	0.299	0.309
Mercury (Hg)-Total (ug/L)	0.00072	0.00075	0.00069	0.00074	0.00073

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2711833-6	L2711833-7	L2711833-8	L2711833-9	L2711833-10
Description	W	W	W	W	W
Sampled Date	30-MAY-22	30-MAY-22	31-MAY-22		30-MAY-22
Sampled Time	14:32	14:48	15:37		
Client ID	AQF6-25	AQF6-60	FIELD BLANK	TRIP BLANK	QC-01
Grouping / **Analyte**					
WATER					
Physical Tests pH (pH units)	7.51	7.51	5.62	5.61	7.87
Total Suspended Solids (mg/L)	<1.0	1.5	<1.0	<1.0	1.5
Anions and Nutrients Alkalinity, Total (as CaCO3) (mg/L)	188	198	<1.0	<1.0	138
Ammonia, Total (as N) (mg/L)	<0.010	0.083	<0.010	<0.010	<0.010
Bicarbonate (HCO3) (mg/L)	230	241	<1.2	<1.2	169
Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
Chloride (Cl) (mg/L)	5.04	5.24	<0.10	<0.10	2.94
Fluoride (F) (mg/L)	0.114	0.130	<0.020	<0.020	0.088
Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
Nitrate and Nitrite as N (mg/L)	0.212	0.113	<0.0051	<0.0051	0.112
Nitrate (as N) (mg/L)	0.212	0.0954	<0.0050	<0.0050	0.112
Nitrite (as N) (mg/L)	<0.0010	0.0173	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total (mg/L)	0.0072	0.0055	<0.0010	0.0040	0.0052
		0.0047	0.0033	<0.0010	
Sulfate (SO4) (mg/L)	191	205	<0.30	<0.30	116
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	6.36	5.31	<0.50	<0.50	7.44
Total Metals Aluminum (Al)-Total (mg/L)	<0.0030	0.0037	<0.0030	<0.0030	0.0109
Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total (mg/L)	0.00189	0.00173	<0.00010	<0.00010	0.00124
Barium (Ba)-Total (mg/L)	0.0268	0.0294	<0.00010	<0.00010	0.0195
Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total (mg/L)	0.043	0.047	<0.010	<0.010	0.025
Cadmium (Cd)-Total (mg/L)	<0.0000050	0.0000053	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total (mg/L)	84.3	90.2	0.066	<0.050	58.5
Cesium (Cs)-Total (mg/L)	0.000271	0.000365	<0.000010	<0.000010	0.000193
Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00052
Iron (Fe)-Total (mg/L)	0.203	0.209	<0.010	<0.010	0.083
Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total (mg/L)	0.0046	0.0047	<0.0010	<0.0010	0.0030
Magnesium (Mg)-Total (mg/L)	31.0	31.9	<0.0050	<0.0050	19.9
Manganese (Mn)-Total (mg/L)	0.295	1.17	<0.00010	<0.00010	0.284
Mercury (Hg)-Total (ug/L)	0.00058	<0.00050	<0.00050	<0.00050	0.00127

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2711833-1	L2711833-2	L2711833-3	L2711833-4	L2711833-5
Description	W	W	W	W	W
Sampled Date	30-MAY-22	30-MAY-22	30-MAY-22	30-MAY-22	30-MAY-22
Sampled Time	12:34	13:29	13:39	13:54	14:13
Client ID	AQF6-0	AQF6-2.5	AQF6-5	AQF6-10	AQF6-15
Grouping / **Analyte**					
WATER					
Total Metals Molybdenum (Mo)-Total (mg/L)	0.000524	0.000403	0.000565	0.000401	0.000428
Nickel (Ni)-Total (mg/L)	0.00056	0.00053	0.00145	<0.00050	0.00052
Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.050	<0.030	<0.030
Potassium (K)-Total (mg/L)	4.71	4.80	37.0	4.85	4.87
Rubidium (Rb)-Total (mg/L)	0.00365	0.00369	0.00483	0.00378	0.00375
Selenium (Se)-Total (mg/L)	0.000052	0.000060	<0.000050	<0.000050	0.000059
Silicon (Si)-Total (mg/L)	3.90	3.90	4.57	3.91	4.01
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	15.0	15.7	13.6	15.6	16.0
Strontium (Sr)-Total (mg/L)	0.173	0.176	0.185	0.179	0.179
Sulfur (S)-Total (mg/L)	38.5	39.2	44.4	40.1	40.7
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	<0.00010	0.00095	0.00069	0.00019	0.00015
Titanium (Ti)-Total (mg/L)	0.00086	0.00051	0.00068	0.00040	0.00052
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	0.00235	0.00235	0.00244	0.00242	0.00243
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.0037	0.0039	0.0030	0.0035	0.0031
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00110	0.00109	0.00110	0.00105	0.00106
Barium (Ba)-Dissolved (mg/L)	0.0200	0.0198	0.0203	0.0202	0.0201
Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	0.031	0.032	0.034	0.035	0.030
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved (mg/L)	62.0	63.3	65.7	63.9	56.1
Cesium (Cs)-Dissolved (mg/L)	0.000186	0.000183	0.000195	0.000195	0.000198
Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	0.00086	0.00058	0.00058	0.00055	0.00054
Iron (Fe)-Dissolved (mg/L)	0.026	0.024	0.021	0.020	0.024

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2711833-6	L2711833-7	L2711833-8	L2711833-9	L2711833-10
Description	W	W	W	W	W
Sampled Date	30-MAY-22	30-MAY-22	31-MAY-22		30-MAY-22
Sampled Time	14:32	14:48	15:37		
Client ID	AQF6-25	AQF6-60	FIELD BLANK	TRIP BLANK	QC-01
Grouping / **Analyte**					
WATER					
Total Metals Molybdenum (Mo)-Total (mg/L)	0.000566	0.00115	<0.000050	<0.000050	0.000413
Nickel (Ni)-Total (mg/L)	0.00052	0.00071	<0.00050	<0.00050	0.00052
Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
Potassium (K)-Total (mg/L)	7.61	8.06	<0.050	<0.050	4.75
Rubidium (Rb)-Total (mg/L)	0.00525	0.00551	<0.00020	<0.00020	0.00373
Selenium (Se)-Total (mg/L)	<0.000050	0.000054	<0.000050	<0.000050	<0.000050
Silicon (Si)-Total (mg/L)	5.15	5.36	<0.10	<0.10	3.85
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	25.6	28.0	0.260	<0.050	15.2
Strontium (Sr)-Total (mg/L)	0.274	0.302	<0.00020	<0.00020	0.178
Sulfur (S)-Total (mg/L)	65.7	68.4	<0.50	<0.50	37.9
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	0.00031	0.00026	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	0.00048
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	0.00416	0.00494	<0.000010	<0.000010	0.00233
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	LAB	FIELD
Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0015	<0.0010	<0.0010	0.0026
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00109	0.00088	<0.00010	<0.00010	0.00117
Barium (Ba)-Dissolved (mg/L)	0.0276	0.0313	<0.00010	<0.00010	0.0197
Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	0.044	0.051	<0.010	<0.010	0.027
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved (mg/L)	79.5	86.5	<0.050	<0.050	56.0
Cesium (Cs)-Dissolved (mg/L)	0.000274	0.000367	<0.000010	<0.000010	0.000206
Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	0.00069	0.00296 RRV	0.00099 RRV	<0.00020	0.00071
Iron (Fe)-Dissolved (mg/L)	0.030	0.014	<0.010	<0.010	0.027

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2711833-1 W 30-MAY-22 12:34 AQF6-0	L2711833-2 W 30-MAY-22 13:29 AQF6-2.5	L2711833-3 W 30-MAY-22 13:39 AQF6-5	L2711833-4 W 30-MAY-22 13:54 AQF6-10	L2711833-5 W 30-MAY-22 14:13 AQF6-15
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0039	0.0040	0.0043	0.0042	0.0034
	Magnesium (Mg)-Dissolved (mg/L)	20.2	20.9	21.0	21.4	19.5
	Manganese (Mn)-Dissolved (mg/L)	0.274	0.276	0.289	0.288	0.297
	Mercury (Hg)-Dissolved (ug/L)	0.00051	0.00085	0.00085	0.00081	0.00058
	Molybdenum (Mo)-Dissolved (mg/L)	0.000399	0.000395	0.000427	0.000408	0.000378
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	5.13	5.17	5.28	5.28	5.25
	Rubidium (Rb)-Dissolved (mg/L)	0.00374	0.00388	0.00386	0.00398	0.00394
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000059
	Silicon (Si)-Dissolved (mg/L)	4.35	4.36	4.33	4.40	4.20
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	13.0	13.4	13.7	13.4	13.0
	Strontium (Sr)-Dissolved (mg/L)	0.174	0.174	0.179	0.184	0.173
	Sulfur (S)-Dissolved (mg/L)	42.2	42.5	43.4	43.6	41.2
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00082	0.00048	0.00028	0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.00219	0.00224	0.00238	0.00232	0.00235
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2711833-6 W 30-MAY-22 14:32 AQF6-25	L2711833-7 W 30-MAY-22 14:48 AQF6-60	L2711833-8 W 31-MAY-22 15:37 FIELD BLANK	L2711833-9 W TRIP BLANK	L2711833-10 W 30-MAY-22 QC-01
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000086	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0048	0.0053	<0.0010	<0.0010	0.0031
	Magnesium (Mg)-Dissolved (mg/L)	27.8	29.4	<0.0050	<0.0050	18.7
	Manganese (Mn)-Dissolved (mg/L)	0.276	1.19	<0.00010	<0.00010	0.279
	Mercury (Hg)-Dissolved (ug/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00060
	Molybdenum (Mo)-Dissolved (mg/L)	0.000546	0.00111	<0.000050	<0.000050	0.000387
	Nickel (Ni)-Dissolved (mg/L)	0.00051	0.00072	<0.00050	<0.00050	0.00052
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	8.14	8.40	<0.050	<0.050	5.15
	Rubidium (Rb)-Dissolved (mg/L)	0.00576	0.00599	<0.00020	<0.00020	0.00404
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000063
	Silicon (Si)-Dissolved (mg/L)	5.44	5.73	<0.050	<0.050	4.14
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	20.9	22.0	0.255 RRV	<0.050	12.7
	Strontium (Sr)-Dissolved (mg/L)	0.262	0.297	<0.00010	<0.00010	0.171
	Sulfur (S)-Dissolved (mg/L)	64.5	67.8	<0.50	<0.50	38.3
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	0.00040	0.00022	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.00402	0.00482	<0.000010	<0.000010	0.00227
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0024	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	Sodium (Na)-Total	MES	L2711833-1, -10, -2, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2711833-10, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2711833-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2711833-10, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2711833-10, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2711833-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2711833-10, -5, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2711833-10, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2711833-10, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2711833-10, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2711833-10, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L2711833-3
Matrix Spike	Calcium (Ca)-Total	MS-B	L2711833-3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2711833-3
Matrix Spike	Manganese (Mn)-Total	MS-B	L2711833-3
Matrix Spike	Sodium (Na)-Total	MS-B	L2711833-3
Matrix Spike	Strontium (Sr)-Total	MS-B	L2711833-3
Matrix Spike	Sulfur (S)-Total	MS-B	L2711833-3
Matrix Spike	Antimony (Sb)-Total	MS-B	L2711833-1, -10, -2, -4, -5, -6, -7, -8, -9
Matrix Spike	Arsenic (As)-Total	MS-B	L2711833-1, -10, -2, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L2711833-1, -10, -2, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2711833-1, -10, -2, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2711833-1, -10, -2, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Total	MS-B	L2711833-1, -10, -2, -4, -5, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Total	MS-B	L2711833-1, -10, -2, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L2711833-1, -10, -2, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2711833-1, -10, -2, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Total	MS-B	L2711833-1, -10, -2, -4, -5, -6, -7, -8, -9
Matrix Spike	Ammonia, Total (as N)	MS-B	L2711833-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L2711833-7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L2711833-1, -10, -3, -4, -6, -8

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

Reference Information

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BR-IC-N-WP Water Bromide in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

C-DOC-HTC-WP Water Dissolved Organic Carbon by Combustion APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP Water Chloride in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-SCREEN-WP Water Conductivity Screen (Internal Use Only) APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

F-IC-N-WP Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HG-D-U-CVAF-VA Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

MET-D-CCMS-WP Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-WP Water Total Metals in Water by CRC ICPMS EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-COL-WP Water Ammonia by colour APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP Water Nitrate+Nitrite CALCULATION

NO2-L-IC-N-WP Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP Water Phosphorus, Total APHA 4500 P PHOSPHORUS-L

Reference Information

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

P-T-L-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-WP	Water	pH	APHA 4500H

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-LR-WP	Water	Total Suspended Solids	APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 Œ 105°C.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Alamos Gold Inc.
C/O Stantec Consulting 500 - 311 Portage Avenue
Winnipeg MB R3B 2B9
Contact: KAREN MATHERS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5794537								
WG3735861-4 LCS								
Alkalinity, Total (as CaCO3)			103.2		%		85-115	03-JUN-22
WG3735861-9 LCS								
Alkalinity, Total (as CaCO3)			102.2		%		85-115	03-JUN-22
WG3735861-1 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-JUN-22
WG3735861-6 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-JUN-22
BR-IC-N-WP	**Water**							
Batch R5794276								
WG3734788-14 LCS								
Bromide (Br)			102.4		%		85-115	02-JUN-22
WG3734788-13 MB								
Bromide (Br)			<0.10		mg/L		0.1	02-JUN-22
Batch R5797901								
WG3735270-3 DUP		**L2711833-1**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	03-JUN-22
WG3735270-2 LCS								
Bromide (Br)			99.9		%		85-115	03-JUN-22
WG3735270-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	03-JUN-22
WG3735270-4 MS		**L2711833-1**						
Bromide (Br)			106.4		%		75-125	03-JUN-22
C-DOC-HTC-WP	**Water**							
Batch R5798338								
WG3737978-3 DUP		**L2711833-6**						
Dissolved Organic Carbon		6.36	6.04		mg/L	5.1	20	09-JUN-22
WG3737978-2 LCS								
Dissolved Organic Carbon			99.8		%		80-120	09-JUN-22
WG3737978-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-JUN-22
CL-L-IC-N-WP	**Water**							
Batch R5794276								
WG3734788-14 LCS								
Chloride (Cl)			98.4		%		90-110	02-JUN-22
WG3734788-13 MB								
Chloride (Cl)			<0.10		mg/L		0.1	02-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-L-IC-N-WP	**Water**							
Batch R5797901								
WG3735270-3 DUP		**L2711833-1**						
Chloride (Cl)		2.92	2.91		mg/L	0.5	20	03-JUN-22
WG3735270-2 LCS								
Chloride (Cl)			98.5		%		90-110	03-JUN-22
WG3735270-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	03-JUN-22
WG3735270-4 MS		**L2711833-1**						
Chloride (Cl)			105.2		%		75-125	03-JUN-22
F-IC-N-WP	**Water**							
Batch R5794276								
WG3734788-14 LCS								
Fluoride (F)			103.2		%		90-110	02-JUN-22
WG3734788-13 MB								
Fluoride (F)			<0.020		mg/L		0.02	02-JUN-22
Batch R5797901								
WG3735270-3 DUP		**L2711833-1**						
Fluoride (F)		0.088	0.087		mg/L	1.2	20	03-JUN-22
WG3735270-2 LCS								
Fluoride (F)			99.2		%		90-110	03-JUN-22
WG3735270-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	03-JUN-22
WG3735270-4 MS		**L2711833-1**						
Fluoride (F)			101.9		%		75-125	03-JUN-22
HG-D-U-CVAF-VA	**Water**							
Batch R5801680								
WG3738932-3 DUP		**L2711833-2**						
Mercury (Hg)-Dissolved		0.00085	0.00078		ug/L	8.4	20	15-JUN-22
WG3738932-2 LCS								
Mercury (Hg)-Dissolved			113.6		%		80-120	15-JUN-22
WG3738932-1 MB		**NP**						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	15-JUN-22
WG3738932-4 MS		**L2711833-4**						
Mercury (Hg)-Dissolved			118.3		%		70-130	15-JUN-22
HG-T-U-CVAF-VA	**Water**							
Batch R5804968								
WG3741730-3 DUP		**L2711833-2**						
Mercury (Hg)-Total		0.00075	0.00075		ug/L	0.7	20	20-JUN-22
WG3741730-2 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-U-CVAF-VA	**Water**							
Batch R5804968								
WG3741730-2 LCS								
Mercury (Hg)-Total			99.7		%		80-120	20-JUN-22
WG3741730-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	20-JUN-22
MET-D-CCMS-WP	**Water**							
Batch R5795695								
WG3736314-2 LCS								
Aluminum (Al)-Dissolved			113.8		%		80-120	07-JUN-22
Antimony (Sb)-Dissolved			99.5		%		80-120	07-JUN-22
Arsenic (As)-Dissolved			101.5		%		80-120	07-JUN-22
Barium (Ba)-Dissolved			106.4		%		80-120	07-JUN-22
Beryllium (Be)-Dissolved			118.5		%		80-120	07-JUN-22
Bismuth (Bi)-Dissolved			104.2		%		80-120	07-JUN-22
Boron (B)-Dissolved			114.4		%		80-120	07-JUN-22
Cadmium (Cd)-Dissolved			102.0		%		80-120	07-JUN-22
Calcium (Ca)-Dissolved			107.5		%		80-120	07-JUN-22
Cesium (Cs)-Dissolved			99.8		%		80-120	07-JUN-22
Chromium (Cr)-Dissolved			104.7		%		80-120	07-JUN-22
Cobalt (Co)-Dissolved			104.4		%		80-120	07-JUN-22
Copper (Cu)-Dissolved			102.7		%		80-120	07-JUN-22
Iron (Fe)-Dissolved			98.6		%		80-120	07-JUN-22
Lead (Pb)-Dissolved			100.9		%		80-120	07-JUN-22
Lithium (Li)-Dissolved			117.8		%		80-120	07-JUN-22
Magnesium (Mg)-Dissolved			107.4		%		80-120	07-JUN-22
Manganese (Mn)-Dissolved			104.1		%		80-120	07-JUN-22
Molybdenum (Mo)-Dissolved			104.8		%		80-120	07-JUN-22
Nickel (Ni)-Dissolved			101.8		%		80-120	07-JUN-22
Phosphorus (P)-Dissolved			115.9		%		80-120	07-JUN-22
Potassium (K)-Dissolved			105.8		%		80-120	07-JUN-22
Rubidium (Rb)-Dissolved			104.1		%		80-120	07-JUN-22
Selenium (Se)-Dissolved			97.1		%		80-120	07-JUN-22
Silicon (Si)-Dissolved			111.6		%		80-120	07-JUN-22
Silver (Ag)-Dissolved			103.4		%		80-120	07-JUN-22
Sodium (Na)-Dissolved			109.9		%		80-120	07-JUN-22
Strontium (Sr)-Dissolved			101.6		%		80-120	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5795695								
WG3736314-2 LCS								
Sulfur (S)-Dissolved			109.6		%		80-120	07-JUN-22
Tellurium (Te)-Dissolved			102.0		%		80-120	07-JUN-22
Thallium (Tl)-Dissolved			103.1		%		80-120	07-JUN-22
Thorium (Th)-Dissolved			101.6		%		80-120	07-JUN-22
Tin (Sn)-Dissolved			100.9		%		80-120	07-JUN-22
Titanium (Ti)-Dissolved			104.9		%		80-120	07-JUN-22
Tungsten (W)-Dissolved			98.2		%		80-120	07-JUN-22
Uranium (U)-Dissolved			103.0		%		80-120	07-JUN-22
Vanadium (V)-Dissolved			104.2		%		80-120	07-JUN-22
Zinc (Zn)-Dissolved			104.4		%		80-120	07-JUN-22
Zirconium (Zr)-Dissolved			99.5		%		80-120	07-JUN-22
WG3736314-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-JUN-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-JUN-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	07-JUN-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-JUN-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-JUN-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-JUN-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-JUN-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-JUN-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	07-JUN-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5795695								
WG3736314-1 MB								
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-JUN-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-JUN-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	07-JUN-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-JUN-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-JUN-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-JUN-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-22
Batch R5796635								
WG3737137-4 DUP		**L2711833-5**						
Aluminum (Al)-Dissolved		0.0031	0.0037		mg/L	19	20	09-JUN-22
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUN-22
Arsenic (As)-Dissolved		0.00106	0.00105		mg/L	0.8	20	09-JUN-22
Barium (Ba)-Dissolved		0.0201	0.0203		mg/L	0.8	20	09-JUN-22
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUN-22
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-JUN-22
Boron (B)-Dissolved		0.030	0.029		mg/L	2.1	20	09-JUN-22
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	09-JUN-22
Calcium (Ca)-Dissolved		56.1	58.9		mg/L	4.8	20	09-JUN-22
Cesium (Cs)-Dissolved		0.000198	0.000200		mg/L	1.1	20	09-JUN-22
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUN-22
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUN-22
Copper (Cu)-Dissolved		0.00054	0.00054		mg/L	1.5	20	09-JUN-22
Iron (Fe)-Dissolved		0.024	0.024		mg/L	0.4	20	09-JUN-22
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5796635								
WG3737137-4 DUP		**L2711833-5**						
Lithium (Li)-Dissolved		0.0034	0.0035		mg/L	4.6	20	09-JUN-22
Magnesium (Mg)-Dissolved		19.5	19.6		mg/L	0.6	20	09-JUN-22
Manganese (Mn)-Dissolved		0.297	0.295		mg/L	0.6	20	09-JUN-22
Molybdenum (Mo)-Dissolved		0.000378	0.000397		mg/L	5.0	20	09-JUN-22
Nickel (Ni)-Dissolved		<0.00050	0.00050	RPD-NA	mg/L	N/A	20	09-JUN-22
Phosphorus (P)-Dissolved		<0.030	<0.030	RPD-NA	mg/L	N/A	20	09-JUN-22
Potassium (K)-Dissolved		5.25	5.35		mg/L	1.9	20	09-JUN-22
Rubidium (Rb)-Dissolved		0.00394	0.00405		mg/L	2.8	20	09-JUN-22
Selenium (Se)-Dissolved		0.000059	<0.000050	RPD-NA	mg/L	N/A	20	09-JUN-22
Silicon (Si)-Dissolved		4.20	4.20		mg/L	0.1	20	09-JUN-22
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-JUN-22
Sodium (Na)-Dissolved		13.0	13.2		mg/L	1.5	20	09-JUN-22
Strontium (Sr)-Dissolved		0.173	0.177		mg/L	2.2	20	09-JUN-22
Sulfur (S)-Dissolved		41.2	40.5		mg/L	1.7	20	09-JUN-22
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-JUN-22
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-JUN-22
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUN-22
Tin (Sn)-Dissolved		0.00020	0.00020		mg/L	1.0	20	09-JUN-22
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	09-JUN-22
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUN-22
Uranium (U)-Dissolved		0.00235	0.00236		mg/L	0.4	20	09-JUN-22
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	09-JUN-22
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	09-JUN-22
Zirconium (Zr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-JUN-22
WG3737137-2 LCS								
Aluminum (Al)-Dissolved			102.6		%		80-120	09-JUN-22
Antimony (Sb)-Dissolved			101.2		%		80-120	09-JUN-22
Arsenic (As)-Dissolved			101.3		%		80-120	09-JUN-22
Barium (Ba)-Dissolved			102.9		%		80-120	09-JUN-22
Beryllium (Be)-Dissolved			95.8		%		80-120	09-JUN-22
Bismuth (Bi)-Dissolved			103.9		%		80-120	09-JUN-22
Boron (B)-Dissolved			91.6		%		80-120	09-JUN-22
Cadmium (Cd)-Dissolved			102.0		%		80-120	09-JUN-22
Calcium (Ca)-Dissolved			101.5		%		80-120	09-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5796635								
WG3737137-2 LCS								
Cesium (Cs)-Dissolved			101.0		%		80-120	09-JUN-22
Chromium (Cr)-Dissolved			104.7		%		80-120	09-JUN-22
Cobalt (Co)-Dissolved			102.9		%		80-120	09-JUN-22
Copper (Cu)-Dissolved			101.4		%		80-120	09-JUN-22
Iron (Fe)-Dissolved			102.3		%		80-120	09-JUN-22
Lead (Pb)-Dissolved			101.1		%		80-120	09-JUN-22
Lithium (Li)-Dissolved			92.1		%		80-120	09-JUN-22
Magnesium (Mg)-Dissolved			100.9		%		80-120	09-JUN-22
Manganese (Mn)-Dissolved			101.5		%		80-120	09-JUN-22
Molybdenum (Mo)-Dissolved			99.0		%		80-120	09-JUN-22
Nickel (Ni)-Dissolved			101.6		%		80-120	09-JUN-22
Phosphorus (P)-Dissolved			105.3		%		80-120	09-JUN-22
Potassium (K)-Dissolved			103.1		%		80-120	09-JUN-22
Rubidium (Rb)-Dissolved			102.8		%		80-120	09-JUN-22
Selenium (Se)-Dissolved			104.4		%		80-120	09-JUN-22
Silicon (Si)-Dissolved			103.0		%		80-120	09-JUN-22
Silver (Ag)-Dissolved			101.3		%		80-120	09-JUN-22
Sodium (Na)-Dissolved			102.5		%		80-120	09-JUN-22
Strontium (Sr)-Dissolved			101.1		%		80-120	09-JUN-22
Sulfur (S)-Dissolved			105.4		%		80-120	09-JUN-22
Tellurium (Te)-Dissolved			97.1		%		80-120	09-JUN-22
Thallium (Tl)-Dissolved			101.1		%		80-120	09-JUN-22
Thorium (Th)-Dissolved			103.5		%		80-120	09-JUN-22
Tin (Sn)-Dissolved			99.97		%		80-120	09-JUN-22
Titanium (Ti)-Dissolved			102.8		%		80-120	09-JUN-22
Tungsten (W)-Dissolved			99.1		%		80-120	09-JUN-22
Uranium (U)-Dissolved			101.4		%		80-120	09-JUN-22
Vanadium (V)-Dissolved			103.7		%		80-120	09-JUN-22
Zinc (Zn)-Dissolved			113.0		%		80-120	09-JUN-22
Zirconium (Zr)-Dissolved			97.7		%		80-120	09-JUN-22
WG3737137-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	09-JUN-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5796635								
WG3737137-1 MB								
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	09-JUN-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	09-JUN-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	09-JUN-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	09-JUN-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	09-JUN-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	09-JUN-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	09-JUN-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	09-JUN-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	09-JUN-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	09-JUN-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	09-JUN-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	09-JUN-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	09-JUN-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	09-JUN-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	09-JUN-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	09-JUN-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	09-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5796635								
WG3737137-1 MB								
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	09-JUN-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	09-JUN-22
WG3737137-5 MS		**L2711833-5**						
Aluminum (Al)-Dissolved			92.7		%		70-130	09-JUN-22
Antimony (Sb)-Dissolved			95.6		%		70-130	09-JUN-22
Arsenic (As)-Dissolved			93.0		%		70-130	09-JUN-22
Barium (Ba)-Dissolved			N/A	MS-B	%		-	09-JUN-22
Beryllium (Be)-Dissolved			89.0		%		70-130	09-JUN-22
Bismuth (Bi)-Dissolved			89.2		%		70-130	09-JUN-22
Boron (B)-Dissolved			85.7		%		70-130	09-JUN-22
Cadmium (Cd)-Dissolved			89.7		%		70-130	09-JUN-22
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	09-JUN-22
Cesium (Cs)-Dissolved			93.0		%		70-130	09-JUN-22
Chromium (Cr)-Dissolved			92.2		%		70-130	09-JUN-22
Cobalt (Co)-Dissolved			89.9		%		70-130	09-JUN-22
Copper (Cu)-Dissolved			87.7		%		70-130	09-JUN-22
Iron (Fe)-Dissolved			88.9		%		70-130	09-JUN-22
Lead (Pb)-Dissolved			88.8		%		70-130	09-JUN-22
Lithium (Li)-Dissolved			87.8		%		70-130	09-JUN-22
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	09-JUN-22
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	09-JUN-22
Molybdenum (Mo)-Dissolved			95.4		%		70-130	09-JUN-22
Nickel (Ni)-Dissolved			89.7		%		70-130	09-JUN-22
Phosphorus (P)-Dissolved			96.3		%		70-130	09-JUN-22
Potassium (K)-Dissolved			N/A	MS-B	%		-	09-JUN-22
Rubidium (Rb)-Dissolved			93.5		%		70-130	09-JUN-22
Selenium (Se)-Dissolved			95.8		%		70-130	09-JUN-22
Silicon (Si)-Dissolved			87.8		%		70-130	09-JUN-22
Silver (Ag)-Dissolved			91.3		%		70-130	09-JUN-22
Sodium (Na)-Dissolved			N/A	MS-B	%		-	09-JUN-22
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	09-JUN-22
Sulfur (S)-Dissolved			N/A	MS-B	%		-	09-JUN-22
Tellurium (Te)-Dissolved			95.9		%		70-130	09-JUN-22
Thallium (Tl)-Dissolved			88.8		%		70-130	09-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5796635								
WG3737137-5 MS		**L2711833-5**						
Thorium (Th)-Dissolved			95.3		%		70-130	09-JUN-22
Tin (Sn)-Dissolved			93.1		%		70-130	09-JUN-22
Titanium (Ti)-Dissolved			92.3		%		70-130	09-JUN-22
Tungsten (W)-Dissolved			93.5		%		70-130	09-JUN-22
Uranium (U)-Dissolved			91.7		%		70-130	09-JUN-22
Vanadium (V)-Dissolved			94.2		%		70-130	09-JUN-22
Zinc (Zn)-Dissolved			88.8		%		70-130	09-JUN-22
Zirconium (Zr)-Dissolved			93.8		%		70-130	09-JUN-22
MET-T-CCMS-VA	**Water**							
Batch R5805852								
WG3740534-6 LCS								
Aluminum (Al)-Total			105.5		%		80-120	22-JUN-22
Antimony (Sb)-Total			102.1		%		80-120	22-JUN-22
Arsenic (As)-Total			106.4		%		80-120	22-JUN-22
Barium (Ba)-Total			102.6		%		80-120	22-JUN-22
Beryllium (Be)-Total			103.0		%		80-120	22-JUN-22
Bismuth (Bi)-Total			108.9		%		80-120	22-JUN-22
Boron (B)-Total			102.0		%		80-120	22-JUN-22
Cadmium (Cd)-Total			105.8		%		80-120	22-JUN-22
Calcium (Ca)-Total			101.1		%		80-120	22-JUN-22
Cesium (Cs)-Total			103.1		%		80-120	22-JUN-22
Chromium (Cr)-Total			104.6		%		80-120	22-JUN-22
Cobalt (Co)-Total			104.5		%		80-120	22-JUN-22
Copper (Cu)-Total			105.4		%		80-120	22-JUN-22
Iron (Fe)-Total			110.1		%		80-120	22-JUN-22
Lead (Pb)-Total			107.0		%		80-120	22-JUN-22
Lithium (Li)-Total			102.7		%		80-120	22-JUN-22
Magnesium (Mg)-Total			107.8		%		80-120	22-JUN-22
Manganese (Mn)-Total			104.5		%		80-120	22-JUN-22
Molybdenum (Mo)-Total			104.3		%		80-120	22-JUN-22
Nickel (Ni)-Total			102.8		%		80-120	22-JUN-22
Phosphorus (P)-Total			118.1		%		80-120	22-JUN-22
Potassium (K)-Total			113.3		%		80-120	22-JUN-22
Rubidium (Rb)-Total			110.7		%		80-120	22-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5805852								
WG3740534-6 LCS								
Selenium (Se)-Total			104.0		%		80-120	22-JUN-22
Silicon (Si)-Total			116.0		%		80-120	22-JUN-22
Silver (Ag)-Total			99.1		%		80-120	22-JUN-22
Sodium (Na)-Total			106.9		%		80-120	22-JUN-22
Strontium (Sr)-Total			102.1		%		80-120	22-JUN-22
Sulfur (S)-Total			104.2		%		80-120	22-JUN-22
Tellurium (Te)-Total			104.0		%		80-120	22-JUN-22
Thallium (Tl)-Total			106.7		%		80-120	22-JUN-22
Thorium (Th)-Total			103.5		%		80-120	22-JUN-22
Tin (Sn)-Total			104.9		%		80-120	22-JUN-22
Titanium (Ti)-Total			101.9		%		80-120	22-JUN-22
Tungsten (W)-Total			105.7		%		80-120	22-JUN-22
Uranium (U)-Total			109.3		%		80-120	22-JUN-22
Vanadium (V)-Total			107.0		%		80-120	22-JUN-22
Zinc (Zn)-Total			106.4		%		80-120	22-JUN-22
Zirconium (Zr)-Total			99.3		%		80-120	22-JUN-22
WG3740534-9 LCS								
Aluminum (Al)-Total			105.5		%		80-120	22-JUN-22
Antimony (Sb)-Total			102.1		%		80-120	22-JUN-22
Arsenic (As)-Total			106.4		%		80-120	22-JUN-22
Barium (Ba)-Total			102.6		%		80-120	22-JUN-22
Beryllium (Be)-Total			103.0		%		80-120	22-JUN-22
Bismuth (Bi)-Total			108.9		%		80-120	22-JUN-22
Boron (B)-Total			102.0		%		80-120	22-JUN-22
Cadmium (Cd)-Total			105.8		%		80-120	22-JUN-22
Calcium (Ca)-Total			101.1		%		80-120	22-JUN-22
Cesium (Cs)-Total			103.1		%		80-120	22-JUN-22
Chromium (Cr)-Total			104.6		%		80-120	22-JUN-22
Cobalt (Co)-Total			104.5		%		80-120	22-JUN-22
Copper (Cu)-Total			105.4		%		80-120	22-JUN-22
Iron (Fe)-Total			110.1		%		80-120	22-JUN-22
Lead (Pb)-Total			107.0		%		80-120	22-JUN-22
Lithium (Li)-Total			102.7		%		80-120	22-JUN-22
Magnesium (Mg)-Total			107.8		%		80-120	22-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5805852								
WG3740534-9 LCS								
Manganese (Mn)-Total			104.5		%		80-120	22-JUN-22
Molybdenum (Mo)-Total			104.3		%		80-120	22-JUN-22
Nickel (Ni)-Total			102.8		%		80-120	22-JUN-22
Phosphorus (P)-Total			118.1		%		80-120	22-JUN-22
Potassium (K)-Total			113.3		%		80-120	22-JUN-22
Rubidium (Rb)-Total			110.7		%		80-120	22-JUN-22
Selenium (Se)-Total			104.0		%		80-120	22-JUN-22
Silicon (Si)-Total			116.0		%		80-120	22-JUN-22
Silver (Ag)-Total			99.1		%		80-120	22-JUN-22
Sodium (Na)-Total			106.9		%		80-120	22-JUN-22
Strontium (Sr)-Total			102.1		%		80-120	22-JUN-22
Sulfur (S)-Total			104.2		%		80-120	22-JUN-22
Tellurium (Te)-Total			104.0		%		80-120	22-JUN-22
Thallium (Tl)-Total			106.7		%		80-120	22-JUN-22
Thorium (Th)-Total			103.5		%		80-120	22-JUN-22
Tin (Sn)-Total			104.9		%		80-120	22-JUN-22
Titanium (Ti)-Total			101.9		%		80-120	22-JUN-22
Tungsten (W)-Total			105.7		%		80-120	22-JUN-22
Uranium (U)-Total			109.3		%		80-120	22-JUN-22
Vanadium (V)-Total			107.0		%		80-120	22-JUN-22
Zinc (Zn)-Total			106.4		%		80-120	22-JUN-22
Zirconium (Zr)-Total			99.3		%		80-120	22-JUN-22
WG3740534-5 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	22-JUN-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	22-JUN-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	22-JUN-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	22-JUN-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	22-JUN-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	22-JUN-22
Boron (B)-Total			<0.010		mg/L		0.01	22-JUN-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	22-JUN-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	22-JUN-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	22-JUN-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	22-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R5805852								
WG3740534-5 MB								
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	22-JUN-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	22-JUN-22
Iron (Fe)-Total			<0.010		mg/L		0.01	22-JUN-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	22-JUN-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	22-JUN-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	22-JUN-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	22-JUN-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	22-JUN-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	22-JUN-22
Phosphorus (P)-Total			<0.050		mg/L		0.05	22-JUN-22
Potassium (K)-Total			<0.050		mg/L		0.05	22-JUN-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	22-JUN-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	22-JUN-22
Silicon (Si)-Total			<0.10		mg/L		0.1	22-JUN-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	22-JUN-22
Sodium (Na)-Total			<0.050		mg/L		0.05	22-JUN-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	22-JUN-22
Sulfur (S)-Total			<0.50		mg/L		0.5	22-JUN-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	22-JUN-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	22-JUN-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	22-JUN-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	22-JUN-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	22-JUN-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	22-JUN-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	22-JUN-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	22-JUN-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	22-JUN-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	22-JUN-22
MET-T-CCMS-WP	**Water**							
Batch R5795695								
WG3736309-2 LCS								
Aluminum (Al)-Total			98.2		%		80-120	07-JUN-22
Antimony (Sb)-Total			106.3		%		80-120	07-JUN-22
Arsenic (As)-Total			99.0		%		80-120	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5795695								
WG3736309-2 LCS								
Barium (Ba)-Total			101.8		%		80-120	07-JUN-22
Beryllium (Be)-Total			91.6		%		80-120	07-JUN-22
Bismuth (Bi)-Total			100.1		%		80-120	07-JUN-22
Boron (B)-Total			90.2		%		80-120	07-JUN-22
Cadmium (Cd)-Total			102.4		%		80-120	07-JUN-22
Calcium (Ca)-Total			96.6		%		80-120	07-JUN-22
Cesium (Cs)-Total			99.6		%		80-120	07-JUN-22
Chromium (Cr)-Total			99.1		%		80-120	07-JUN-22
Cobalt (Co)-Total			101.0		%		80-120	07-JUN-22
Copper (Cu)-Total			100.5		%		80-120	07-JUN-22
Iron (Fe)-Total			97.5		%		80-120	07-JUN-22
Lead (Pb)-Total			99.4		%		80-120	07-JUN-22
Lithium (Li)-Total			89.0		%		80-120	07-JUN-22
Magnesium (Mg)-Total			99.3		%		80-120	07-JUN-22
Manganese (Mn)-Total			98.8		%		80-120	07-JUN-22
Molybdenum (Mo)-Total			102.7		%		80-120	07-JUN-22
Nickel (Ni)-Total			99.6		%		80-120	07-JUN-22
Potassium (K)-Total			94.0		%		80-120	07-JUN-22
Phosphorus (P)-Total			95.5		%		80-120	07-JUN-22
Rubidium (Rb)-Total			97.5		%		80-120	07-JUN-22
Selenium (Se)-Total			100.9		%		80-120	07-JUN-22
Silicon (Si)-Total			94.1		%		80-120	07-JUN-22
Silver (Ag)-Total			101.6		%		80-120	07-JUN-22
Sodium (Na)-Total			123.5	MES	%		80-120	07-JUN-22
Strontium (Sr)-Total			100.7		%		80-120	07-JUN-22
Sulfur (S)-Total			98.8		%		80-120	07-JUN-22
Tellurium (Te)-Total			100.9		%		80-120	07-JUN-22
Thallium (Tl)-Total			102.1		%		80-120	07-JUN-22
Thorium (Th)-Total			95.6		%		80-120	07-JUN-22
Tin (Sn)-Total			100.8		%		80-120	07-JUN-22
Titanium (Ti)-Total			93.9		%		80-120	07-JUN-22
Tungsten (W)-Total			100.3		%		80-120	07-JUN-22
Uranium (U)-Total			98.8		%		80-120	07-JUN-22
Vanadium (V)-Total			101.3		%		80-120	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5795695								
WG3736309-2 LCS								
Zinc (Zn)-Total			98.6		%		80-120	07-JUN-22
Zirconium (Zr)-Total			98.0		%		80-120	07-JUN-22
WG3736309-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	07-JUN-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Boron (B)-Total			<0.010		mg/L		0.01	07-JUN-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	07-JUN-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	07-JUN-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	07-JUN-22
Iron (Fe)-Total			<0.010		mg/L		0.01	07-JUN-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	07-JUN-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	07-JUN-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	07-JUN-22
Potassium (K)-Total			<0.050		mg/L		0.05	07-JUN-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	07-JUN-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	07-JUN-22
Silicon (Si)-Total			<0.10		mg/L		0.1	07-JUN-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Sodium (Na)-Total			<0.050		mg/L		0.05	07-JUN-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Sulfur (S)-Total			<0.50		mg/L		0.5	07-JUN-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	07-JUN-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	07-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5795695								
WG3736309-1 MB								
Thorium (Th)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	07-JUN-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	07-JUN-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	07-JUN-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	07-JUN-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	07-JUN-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	07-JUN-22
NH3-COL-WP	**Water**							
Batch R5796520								
WG3738200-10 LCS								
Ammonia, Total (as N)			99.3		%		85-115	09-JUN-22
WG3738200-9 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	09-JUN-22
NO2-L-IC-N-WP	**Water**							
Batch R5794276								
WG3734788-14 LCS								
Nitrite (as N)			99.7		%		90-110	02-JUN-22
WG3734788-13 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	02-JUN-22
Batch R5797901								
WG3735270-3 DUP		**L2711833-1**						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-JUN-22
WG3735270-2 LCS								
Nitrite (as N)			100.3		%		90-110	03-JUN-22
WG3735270-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	03-JUN-22
WG3735270-4 MS		**L2711833-1**						
Nitrite (as N)			110.1		%		75-125	03-JUN-22
NO3-L-IC-N-WP	**Water**							
Batch R5794276								
WG3734788-14 LCS								
Nitrate (as N)			99.3		%		90-110	02-JUN-22
WG3734788-13 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	02-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-WP	**Water**							
Batch R5797901								
WG3735270-3 DUP		**L2711833-1**						
Nitrate (as N)		0.111	0.110		mg/L	0.3	20	03-JUN-22
WG3735270-2 LCS								
Nitrate (as N)			98.8		%		90-110	03-JUN-22
WG3735270-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	03-JUN-22
WG3735270-4 MS		**L2711833-1**						
Nitrate (as N)			104.6		%		75-125	03-JUN-22
P-T-COL-WP	**Water**							
Batch R5798716								
WG3737480-7 DUP		**L2711833-9**						
Phosphorus (P)-Total		0.0040	<0.0030	RPD-NA	mg/L	N/A	20	13-JUN-22
WG3737480-6 LCS								
Phosphorus (P)-Total			95.7		%		80-120	13-JUN-22
WG3737480-5 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	13-JUN-22
WG3737480-8 MS		**L2711833-10**						
Phosphorus (P)-Total			95.6		%		70-130	13-JUN-22
P-T-L-COL-WP	**Water**							
Batch R5811738								
WG3745475-2 LCS								
Phosphorus (P)-Total			84.6		%		80-120	30-JUN-22
WG3745475-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	30-JUN-22
PH-WP	**Water**							
Batch R5794537								
WG3735861-2 LCS								
pH			6.99		pH units		6.9-7.1	03-JUN-22
WG3735861-7 LCS								
pH			7.02		pH units		6.9-7.1	03-JUN-22
SO4-IC-N-WP	**Water**							
Batch R5794276								
WG3734788-14 LCS								
Sulfate (SO4)			100.3		%		90-110	02-JUN-22
WG3734788-13 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	02-JUN-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP	**Water**							
Batch R5797901								
WG3735270-3 DUP		**L2711833-1**						
Sulfate (SO4)		115	115		mg/L	0.1	20	03-JUN-22
WG3735270-2 LCS								
Sulfate (SO4)			99.3		%		90-110	03-JUN-22
WG3735270-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	03-JUN-22
WG3735270-4 MS		**L2711833-1**						
Sulfate (SO4)			N/A	MS-B	%		-	03-JUN-22
SOLIDS-TOTSUS-LR-WP	**Water**							
Batch R5795143								
WG3735086-6 DUP		**L2711833-1**						
Total Suspended Solids		1.0	1.0		mg/L	0.0	20	06-JUN-22
WG3735086-5 LCS								
Total Suspended Solids			93.5		%		85-115	06-JUN-22
WG3735086-4 MB								
Total Suspended Solids			<1.0		mg/L		1	06-JUN-22
Batch R5796370								
WG3737488-3 DUP		**L2711833-9**						
Total Suspended Solids		<1.0	<1.0	RPD-NA	mg/L	N/A	20	09-JUN-22
WG3737488-2 LCS								
Total Suspended Solids			95.7		%		85-115	09-JUN-22
WG3737488-1 MB								
Total Suspended Solids			<1.0		mg/L		1	09-JUN-22
Batch R5796731								
WG3736417-2 LCS								
Total Suspended Solids			100.2		%		85-115	07-JUN-22
WG3736417-1 MB								
Total Suspended Solids			<1.0		mg/L		1	07-JUN-22

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	30-MAY-22 12:34	03-JUN-22 10:21	0.25	94	hours	EHTR-FM
	2	30-MAY-22 13:29	03-JUN-22 10:21	0.25	93	hours	EHTR-FM
	3	30-MAY-22 13:39	03-JUN-22 10:21	0.25	93	hours	EHTR-FM
	4	30-MAY-22 13:54	03-JUN-22 10:21	0.25	92	hours	EHTR-FM
	5	30-MAY-22 14:13	03-JUN-22 10:21	0.25	92	hours	EHTR-FM
	6	30-MAY-22 14:32	03-JUN-22 10:21	0.25	92	hours	EHTR-FM
	7	30-MAY-22 14:48	03-JUN-22 10:21	0.25	91	hours	EHTR-FM
	8	31-MAY-22 15:37	03-JUN-22 10:21	0.25	67	hours	EHTR-FM
	9	Not provided	03-JUN-22 10:21	0.25	22	hours	EHTR-FM
	10	30-MAY-22	03-JUN-22 10:21	0.25	94	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC (Low Level)							
	1	30-MAY-22 12:34	03-JUN-22 13:00	3	4	days	EHTL
	3	30-MAY-22 13:39	03-JUN-22 13:00	3	4	days	EHTL
	4	30-MAY-22 13:54	03-JUN-22 13:00	3	4	days	EHTL
	6	30-MAY-22 14:32	03-JUN-22 13:00	3	4	days	EHTL
	10	30-MAY-22	03-JUN-22 13:00	3	4	days	EHTR
Nitrite in Water by IC (Low Level)							
	1	30-MAY-22 12:34	03-JUN-22 13:00	3	4	days	EHTL
	3	30-MAY-22 13:39	03-JUN-22 13:00	3	4	days	EHTL
	4	30-MAY-22 13:54	03-JUN-22 13:00	3	4	days	EHTL
	6	30-MAY-22 14:32	03-JUN-22 13:00	3	4	days	EHTL
	10	30-MAY-22	03-JUN-22 13:00	3	4	days	EHTR
Phosphorus, Total							
	7	30-MAY-22 14:48	30-JUN-22 15:55	28	31	days	EHT
	8	31-MAY-22 15:37	30-JUN-22 15:55	28	30	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2711833 were received on 02-JUN-22 12:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2711833-COFC

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Nikolay.sidenko@stantec.com

Email 2: Karen.Mathers@Stantec.com

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax:

Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information

ALS Account # / Quote #:	Q89053
Job #:	ALAMOS - 111473003
PO / AFE:	
LSD:	WQQ
ALS Lab Work Order # (ALS use only):	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP	ANIONS-6-L-IC-WP	C-DOC-HTC-WP	HG-D-U-CVAF-VA	HG-T-U-CVAF-VA	MET-D-CCMS-WP	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	PH-WP	SOLIDS-TOTSUS-LR-WP	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
1	AQF6-0	30.05.22	1334	W	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
2	AQF6-2.5	"	1339	"	1	"	"	"	"	"	"	"	"	"	"	"			
3	AQF6-5	"	1339	"	1	"	"	"	"	"	"	"	"	"	"	"			
4	AQF6-10	"	1354	"	1	"	"	"	"	"	"	"	"	"	"	"			
5	AQF6-15	"	1413	"	1	"	"	"	"	"	"	"	"	"	"	"			
6	AQF6-25	"	1432	"	1	"	"	"	"	"	"	"	"	"	"	"			
7	AQF6-60	"	1448	"	1	"	"	"	"	"	"	"	"	"	"	"			
8	FIELD BLANK	31.05.22	1537	"	1	"	"	"	"	"	"	"	"	"	"	"			
9	TRIP BLANK	—	—	"	1	"	"	"	"	"	"	"	"	"	"	"			
10	QC-01	30.05.22	—	"	1	"	"	"	"	"	"	"	"	"	"	"			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Mercury, Dissolved mercury, nutrients + metals field filtered

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
							9.9

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
B.Lynd	31.05.22	1630

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
	JUN 02 2022	

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Alamos Gold Inc.
ATTN: KAREN MATHERS
C/O Stantec Consulting
500 - 311 Portage Avenue
Winnipeg MB R3B 2B9

Date Received: 30-JUN-22
Report Date: 23-AUG-22 11:14 (MT)
Version: FINAL REV. 2

Client Phone: 204-924-5735

Certificate of Analysis

Lab Work Order #: L2719501

Project P.O. #: NOT SUBMITTED
Job Reference: ALAMOS
C of C Numbers:
Legal Site Desc:

Comments: .
23-AUG-2022 Revised report - ID's on -5 and -6 corrected

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2719501-1	L2719501-2	L2719501-3	L2719501-4	L2719501-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	25-JUN-22	25-JUN-22	25-JUN-22	25-JUN-22	25-JUN-22
	Sampled Time	11:53	12:26	13:03	13:30	11:11
	Client ID	AQM71	AQM72	AQM73	AQM74	AQF7S
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	40.9	6.98	12.9	13.8	15.4
	Total Suspended Solids (mg/L)	2.0	5.1	<1.0	4.4	<1.0
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<2.0	5.4	3.0	2.4	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	29.8	2.3	7.0	11.2	14.3
	Ammonia, Total (as N) (mg/L)	0.015	<0.010	0.020	0.016	<0.010
	Bicarbonate (HCO3) (mg/L)	36.4	2.8	8.5	13.7	17.4
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.037	0.051	0.044	0.040	0.040
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	<0.070	<0.070	<0.070	<0.070	<0.070
	Nitrate (as N) (mg/L)	0.022	<0.020	<0.020	<0.020	<0.020
	Nitrite (as N) (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Total Kjeldahl Nitrogen (mg/L)	0.44	0.39	0.45	0.57	0.31
	Phosphorus (P)-Total (mg/L)	0.0087	0.0053	0.0155	0.0271	0.0065
	Sulfate (SO4) (mg/L)	9.05	0.32	<0.30	0.44	0.62
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0014
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	17.0	22.2	23.2	13.0	9.17
	Total Organic Carbon (mg/L)	15.7	21.8	21.8	12.3	8.99
Total Metals	Aluminum (Al)-Total (mg/L)	0.0641	0.286	0.0863	0.0708	0.0300
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00023	0.00030	0.00035	0.00022	0.00020
	Barium (Ba)-Total (mg/L)	0.00900	0.00936	0.00400	0.00621	0.00721
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	0.0000103	<0.0000050	0.0000060	<0.0000050
	Calcium (Ca)-Total (mg/L)	14.5	2.05	4.20	4.33	4.28
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00025	0.00048	0.00028	0.00023	0.00018
	Cobalt (Co)-Total (mg/L)	<0.00010	0.00038	0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	0.00082	<0.00050	0.00056	<0.00050
	Iron (Fe)-Total (mg/L)	0.172	1.83	0.449	0.246	0.078

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2719501-6 WATER 25-JUN-22 11:33 AQF7D	L2719501-7 WATER 25-JUN-22 14:20 FIELD BLANK	L2719501-8 WATER 26-JUN-22 08:45 AQF42	L2719501-9 WATER 26-JUN-22 09:24 AQF40	L2719501-10 WATER 26-JUN-22 12:23 AQF38
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	15.9	<0.20	9.36	10.1	20.6
	Total Suspended Solids (mg/L)	1.4	<1.0	2.0	4.2	2.9
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	14.7	<1.0	8.1	8.5	21.3
	Ammonia, Total (as N) (mg/L)	0.024	0.014	<0.010	<0.010	<0.010
	Bicarbonate (HCO3) (mg/L)	17.9	<1.2	9.9	10.4	26.0
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.038	<0.020	0.056	0.056	0.070
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	<0.070	<0.070	<0.070	<0.070	<0.070
	Nitrate (as N) (mg/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Nitrite (as N) (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Total Kjeldahl Nitrogen (mg/L)	0.39	<0.20	0.35	0.36	0.45
	Phosphorus (P)-Total (mg/L)	0.0090	0.0013	0.0156	0.0215	0.0170
	Sulfate (SO4) (mg/L)	0.76	<0.30	0.42	0.41	<0.30
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	8.81	0.93 RRV	9.99	9.84	10.4
	Total Organic Carbon (mg/L)	8.72	<0.50 RRV	9.47	9.90	11.1
Total Metals	Aluminum (Al)-Total (mg/L)	0.0254	<0.0030	0.0588	0.0626	0.0403
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00025	<0.00010	0.00016	0.00017	0.00018
	Barium (Ba)-Total (mg/L)	0.00813	<0.00010	0.00601	0.00604	0.00898
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	0.0000052	<0.0000050
	Calcium (Ca)-Total (mg/L)	4.35	<0.050	2.85	3.00	6.40
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00011	<0.00010	0.00024	0.00020	0.00018
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.114	<0.010	0.361	0.342	0.230

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2719501-11 WATER 26-JUN-22 14:22 AQF41	L2719501-12 WATER 26-JUN-22 16:06 AQF45	L2719501-13 WATER 26-JUN-22 13:45 AQF46	L2719501-14 WATER 27-JUN-22 08:33 AQM28	L2719501-15 WATER 27-JUN-22 10:42 AQM29C
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	9.90	10.2	23.4	18.2	8.74
	Total Suspended Solids (mg/L)	7.3	2.8	2.9	5.0	2.2
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	<2.0	2.2	<2.0	<2.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	7.3	8.5	23.8	9.0	6.8
	Ammonia, Total (as N) (mg/L)	<0.010	<0.010	0.011	<0.010	0.016
	Bicarbonate (HCO3) (mg/L)	8.9	10.4	29.0	11.0	8.3
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	0.72	<0.50	<0.50	0.65	<0.50
	Fluoride (F) (mg/L)	0.056	0.056	0.038	0.048	0.050
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	<0.070	<0.070	<0.070	<0.070	<0.070
	Nitrate (as N) (mg/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Nitrite (as N) (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Total Kjeldahl Nitrogen (mg/L)	0.40	0.37	0.54	0.40	0.28
	Phosphorus (P)-Total (mg/L)	0.0206	0.0148	0.0139	0.0167	0.0202
	Sulfate (SO4) (mg/L)	0.46	0.54	0.46	7.37	1.11
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	9.53	9.62	12.1	11.3	8.07
	Total Organic Carbon (mg/L)	8.94	8.50	10.2	10.2	7.18
Total Metals	Aluminum (Al)-Total (mg/L)	0.0948	0.0778	0.0420	0.171	0.0539
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00016	0.00016	0.00023	0.00024	0.00016
	Barium (Ba)-Total (mg/L)	0.0100	0.00614	0.00712	0.00750	0.00612
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.0000089	<0.0000050	<0.0000050	0.0000248	<0.0000050
	Calcium (Ca)-Total (mg/L)	3.26	3.05	7.58	5.71	2.63
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00030	0.00024	0.00014	0.00033	0.00019
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00098	0.00012
	Copper (Cu)-Total (mg/L)	0.00066	<0.00050	<0.00050	0.00469	0.00079
	Iron (Fe)-Total (mg/L)	0.488	0.325	0.063	0.849	0.317

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2719501-16	L2719501-17	L2719501-18	L2719501-19	
Description	WATER	WATER	WATER	WATER	
Sampled Date	27-JUN-22	27-JUN-22	27-JUN-22	27-JUN-22	
Sampled Time	14:57	15:19			
Client ID	AQF43	AQF44	QC-01	TRIP BLANK	
Grouping / **Analyte**					
WATER					
Physical Tests Hardness (as CaCO3) (mg/L)	10.6	9.82	18.2	<0.20	
Total Suspended Solids (mg/L)	2.0	2.1	3.0	<1.0	
Anions and Nutrients Acidity (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	
Alkalinity, Total (as CaCO3) (mg/L)	8.5	8.5	8.6	<1.0	
Ammonia, Total (as N) (mg/L)	<0.010	<0.010	0.032	0.060	
Bicarbonate (HCO3) (mg/L)	10.4	10.4	10.5	<1.2	
Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	
Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	
Chloride (Cl) (mg/L)	<0.50	<0.50	0.72	<0.50	
Fluoride (F) (mg/L)	0.057	0.057	0.049	<0.020	
Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	
Nitrate and Nitrite as N (mg/L)	<0.070	<0.070	<0.070	<0.070	
Nitrate (as N) (mg/L)	<0.020	<0.020	<0.020	<0.020	
Nitrite (as N) (mg/L)	<0.010	<0.010	<0.010	<0.010	
Total Kjeldahl Nitrogen (mg/L)	<0.20	0.33	0.39	<0.20	
Phosphorus (P)-Total (mg/L)	0.0140	0.0142	0.0181	<0.0010	
Sulfate (SO4) (mg/L)	0.51	0.48	7.47	<0.30	
Cyanides Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	9.53	9.93	11.4	<0.50	
Total Organic Carbon (mg/L)	8.84	8.39	10.5	<0.50	
Total Metals Aluminum (Al)-Total (mg/L)	0.0681	0.0659	0.192	<0.0030	
Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Arsenic (As)-Total (mg/L)	0.00016	0.00017	0.00024	<0.00010	
Barium (Ba)-Total (mg/L)	0.00596	0.00609	0.00775	<0.00010	
Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	
Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	0.0000237	<0.0000050	
Calcium (Ca)-Total (mg/L)	2.91	2.95	5.70	<0.050	
Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
Chromium (Cr)-Total (mg/L)	0.00026	0.00023	0.00766	<0.00010	
Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	0.00105	<0.00010	
Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	0.00516	<0.00050	
Iron (Fe)-Total (mg/L)	0.314	0.321	1.07	<0.010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2719501-1	L2719501-2	L2719501-3	L2719501-4	L2719501-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	25-JUN-22	25-JUN-22	25-JUN-22	25-JUN-22	25-JUN-22
	Sampled Time	11:53	12:26	13:03	13:30	11:11
	Client ID	AQM71	AQM72	AQM73	AQM74	AQF7S
Grouping	**Analyte**					
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	0.000105	<0.000050	0.000067	<0.000050
	Lithium (Li)-Total (mg/L)	0.0014	0.0016	0.0016	0.0013	0.0010
	Magnesium (Mg)-Total (mg/L)	1.41	0.566	0.763	0.921	1.42
	Manganese (Mn)-Total (mg/L)	0.0122	0.0318	0.0181	0.0244	0.00313
	Mercury (Hg)-Total (ug/L)	0.00199	0.00232	0.00207	0.00305	0.00126
	Molybdenum (Mo)-Total (mg/L)	0.000058	0.000052	<0.000050	0.000234	0.000065
	Nickel (Ni)-Total (mg/L)	0.00056	0.00103	0.00054	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Total (mg/L)	0.517	0.327	0.077	0.502	0.503
	Rubidium (Rb)-Total (mg/L)	0.00077	0.00069	<0.00020	0.00068	0.00097
	Selenium (Se)-Total (mg/L)	0.000052	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	1.33	3.92	2.73	0.52	1.04
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	1.21	0.797	0.965	0.874	0.998
	Strontium (Sr)-Total (mg/L)	0.0205	0.00851	0.00933	0.0103	0.0120
	Sulfur (S)-Total (mg/L)	3.51	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00068
	Titanium (Ti)-Total (mg/L)	0.00172	0.00597	0.00088	0.00121	0.00046
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	0.000020	0.000036	<0.000010	0.000020	<0.000010
	Vanadium (V)-Total (mg/L)	<0.00050	0.00077	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	0.0031	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00020	0.00034	<0.00020	<0.00020	<0.00020
Dissolved Metals	Dissolved MeHg Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0471	0.249	0.0835	0.0505	0.0260
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00023	0.00023	0.00032	0.00019	0.00017
	Barium (Ba)-Dissolved (mg/L)	0.00899	0.00826	0.00368	0.00552	0.0281 RRV
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000088	<0.0000050	<0.0000050	<0.0000050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2719501-6	L2719501-7	L2719501-8	L2719501-9	L2719501-10
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	25-JUN-22	25-JUN-22	26-JUN-22	26-JUN-22	26-JUN-22
	Sampled Time	11:33	14:20	08:45	09:24	12:23
	Client ID	AQF7D	FIELD BLANK	AQF42	AQF40	AQF38
Grouping	**Analyte**					
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	0.000057	0.000061	<0.000050
	Lithium (Li)-Total (mg/L)	0.0010	<0.0010	0.0015	0.0015	0.0013
	Magnesium (Mg)-Total (mg/L)	1.40	<0.0050	0.761	0.801	1.44
	Manganese (Mn)-Total (mg/L)	0.00576	<0.00010	0.0158	0.0229	0.0659
	Mercury (Hg)-Total (ug/L)	0.00167	<0.00050	0.00203	0.00223	0.00146
	Molybdenum (Mo)-Total (mg/L)	0.000072	<0.000050	0.000201	0.000076	0.00145
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Total (mg/L)	0.492	<0.050	0.515	0.535	0.518
	Rubidium (Rb)-Total (mg/L)	0.00082	<0.00020	0.00097	0.00098	0.00084
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	1.07	<0.10	2.07	1.98	1.03
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.987	0.066	0.981	0.981	1.01
	Strontium (Sr)-Total (mg/L)	0.0119	<0.00020	0.0109	0.0106	0.0143
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	0.0116	<0.00010	0.00028	0.00024	0.00029
	Titanium (Ti)-Total (mg/L)	0.00048	<0.00030	0.00171	0.00153	0.00059
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	0.000010	<0.000010	0.000024	0.000023	0.000015
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	0.0049	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals	Dissolved MeHg Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0201	<0.0010	0.0341	0.0359	0.0222
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00021	<0.00010	0.00016	0.00017	0.00016
	Barium (Ba)-Dissolved (mg/L)	0.00815	0.00057 RRV	0.00552	0.00533	0.00792
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2719501-11 WATER 26-JUN-22 14:22 AQF41	L2719501-12 WATER 26-JUN-22 16:06 AQF45	L2719501-13 WATER 26-JUN-22 13:45 AQF46	L2719501-14 WATER 27-JUN-22 08:33 AQM28	L2719501-15 WATER 27-JUN-22 10:42 AQM29C
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	0.000092	0.000053	<0.000050	0.000103	0.000058
	Lithium (Li)-Total (mg/L)	0.0015	0.0015	0.0012	0.0015	0.0015
	Magnesium (Mg)-Total (mg/L)	0.814	0.825	1.53	1.18	0.656
	Manganese (Mn)-Total (mg/L)	0.0631	0.0168	0.0105	0.0380	0.0199
	Mercury (Hg)-Total (ug/L)	0.00362	0.00176	0.00161	0.00205	0.00129
	Molybdenum (Mo)-Total (mg/L)	0.000071	0.000078	0.000067	0.000056	<0.000050
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	0.0589	0.00408
	Phosphorus (P)-Total (mg/L)	0.052	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Total (mg/L)	0.573	0.511	0.594	0.703	0.482
	Rubidium (Rb)-Total (mg/L)	0.00108	0.00099	0.00078	0.00096	0.00098
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	2.05	2.03	0.37	2.45	2.12
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.974	0.986	0.902	1.23	0.938
	Strontium (Sr)-Total (mg/L)	0.0127	0.0112	0.0120	0.0156	0.0107
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	2.46	0.54
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	0.00016	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00342	0.00251	0.00086	0.00157	0.00182
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	0.000029	0.000028	<0.000010	0.000028	0.000024
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	0.0071	<0.0030	<0.0030	0.0135	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals	Dissolved MeHg Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0334	0.0343	0.0264	0.127	0.0244
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00015	0.00014	0.00024	0.00021	0.00014
	Barium (Ba)-Dissolved (mg/L)	0.00950	0.00558	0.0253 RRV	0.00763	0.00577
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	0.0000193	<0.0000050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2719501-16	L2719501-17	L2719501-18	L2719501-19	
Description	WATER	WATER	WATER	WATER	
Sampled Date	27-JUN-22	27-JUN-22	27-JUN-22	27-JUN-22	
Sampled Time	14:57	15:19			
Client ID	AQF43	AQF44	QC-01	TRIP BLANK	
Grouping **Analyte**					
WATER					
Total Metals Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	0.000103	<0.000050	
Lithium (Li)-Total (mg/L)	0.0015	0.0015	<0.0010	<0.0010	
Magnesium (Mg)-Total (mg/L)	0.847	0.828	1.20	<0.0050	
Manganese (Mn)-Total (mg/L)	0.0167	0.0173	0.0429	<0.00010	
Mercury (Hg)-Total (ug/L)	0.00176	0.00187	0.00199	<0.00050	
Molybdenum (Mo)-Total (mg/L)	0.000051	<0.000050	0.000789	<0.000050	
Nickel (Ni)-Total (mg/L)	0.00058	<0.00050	0.0615	<0.00050	
Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	
Potassium (K)-Total (mg/L)	0.537	0.562	0.700	<0.050	
Rubidium (Rb)-Total (mg/L)	0.00100	0.00098	0.00105	<0.00020	
Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
Silicon (Si)-Total (mg/L)	2.13	2.17	2.51	<0.10	
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium (Na)-Total (mg/L)	1.08	1.10	1.26	<0.050	
Strontium (Sr)-Total (mg/L)	0.0118	0.0118	0.0151	<0.00020	
Sulfur (S)-Total (mg/L)	<0.50	<0.50	2.24	<0.50	
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Tin (Sn)-Total (mg/L)	<0.00010	0.00031	<0.00010	<0.00010	
Titanium (Ti)-Total (mg/L)	0.00184	0.00178	0.00183	<0.00030	
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Uranium (U)-Total (mg/L)	0.000023	0.000020	0.000024	<0.000010	
Vanadium (V)-Total (mg/L)	0.00088	0.00086	0.00070	<0.00050	
Zinc (Zn)-Total (mg/L)	<0.0030	0.0123	0.0151	<0.0030	
Zirconium (Zr)-Total (mg/L)	0.00026	<0.00020	<0.00020	<0.00020	
Dissolved Metals Dissolved MeHg Filtration Location	FIELD	FIELD	FIELD	FIELD	
Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
Aluminum (Al)-Dissolved (mg/L)	0.0311	0.0334	0.126	<0.0010	
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Arsenic (As)-Dissolved (mg/L)	0.00017	0.00016	0.00021	<0.00010	
Barium (Ba)-Dissolved (mg/L)	0.00534	0.0253 RRV	0.00717	<0.00010	
Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	0.0000193	<0.0000050	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2719501-1	L2719501-2	L2719501-3	L2719501-4	L2719501-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	25-JUN-22	25-JUN-22	25-JUN-22	25-JUN-22	25-JUN-22
	Sampled Time	11:53	12:26	13:03	13:30	11:11
	Client ID	AQM71	AQM72	AQM73	AQM74	AQF7S
Grouping	**Analyte**					
WATER						
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	14.1	1.91	3.96	4.07	3.96
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Dissolved (mg/L)	0.00016	0.00039	0.00017	0.00015	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00033	0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00063	0.00087	0.00028	0.00044	0.00118
	Iron (Fe)-Dissolved (mg/L)	0.132	1.43	0.398	0.140	0.068
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000066	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	1.39	0.538	0.734	0.889	1.35
	Manganese (Mn)-Dissolved (mg/L)	0.0107	0.0283	0.0171	0.0105	0.00142
	Mercury (Hg)-Dissolved (ug/L)	0.00167	0.00240	0.00198	0.00162	0.00131
	Molybdenum (Mo)-Dissolved (mg/L)	0.000052	<0.000050	<0.000050	0.000233	0.000084
	Nickel (Ni)-Dissolved (mg/L)	0.00070	0.00089	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.555	0.284	0.094	0.465	0.594
	Rubidium (Rb)-Dissolved (mg/L)	0.00076	0.00065	<0.00020	0.00060	0.00090
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	1.30	3.80	2.64	0.458	1.03
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.20	0.773	0.925	0.846	0.987
	Strontium (Sr)-Dissolved (mg/L)	0.0202	0.00807	0.00880	0.00986	0.0118
	Sulfur (S)-Dissolved (mg/L)	3.63	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00016
	Titanium (Ti)-Dissolved (mg/L)	0.00070	0.00470	0.00069	0.00060	0.00036
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.000015	0.000033	<0.000010	0.000016	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	0.00069	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0033	0.0028	0.0026	0.0015	0.0036
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	0.00039	<0.00020	<0.00020	<0.00020
Speciated Metals	Chromium, Hexavalent (ug/L)	0.71	<0.50	1.34	<0.50	<0.50
	Methylmercury (as MeHg)-Dissolved (ug/L)	0.000262	0.000209	0.000205	0.000214	0.000055
	Methylmercury (as MeHg)-Total (ug/L)	0.000337	0.000170	0.000137	0.000212	0.000038

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2719501-6	L2719501-7	L2719501-8	L2719501-9	L2719501-10
Description	WATER	WATER	WATER	WATER	WATER
Sampled Date	25-JUN-22	25-JUN-22	26-JUN-22	26-JUN-22	26-JUN-22
Sampled Time	11:33	14:20	08:45	09:24	12:23
Client ID	AQF7D	FIELD BLANK	AQF42	AQF40	AQF38
Grouping / **Analyte**					
WATER					
Dissolved Metals Calcium (Ca)-Dissolved (mg/L)	4.09	<0.050	2.57	2.77	5.94
Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00013	0.00013	0.00010
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	0.00030	<0.00020	0.00033	0.00032	<0.00020
Iron (Fe)-Dissolved (mg/L)	0.069	<0.010	0.183	0.180	0.093
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved (mg/L)	1.37	<0.0050	0.716	0.779	1.41
Manganese (Mn)-Dissolved (mg/L)	0.00129	<0.00010	0.00212	0.00348	0.00631
Mercury (Hg)-Dissolved (ug/L)	0.00127	<0.00050	0.00164	0.00177	0.00135
Molybdenum (Mo)-Dissolved (mg/L)	0.000060	<0.000050	0.000078	0.000077	0.00137
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
Potassium (K)-Dissolved (mg/L)	0.496	<0.050	0.552	0.532	0.545
Rubidium (Rb)-Dissolved (mg/L)	0.00091	<0.00020	0.00090	0.00091	0.00079
Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si)-Dissolved (mg/L)	1.05	<0.050	1.98	1.97	0.981
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	0.964	<0.050	0.930	0.950	0.978
Strontium (Sr)-Dissolved (mg/L)	0.0117	<0.00010	0.0105	0.0107	0.0142
Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	0.00181	<0.00010	0.00030	0.00019	0.00020
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	0.00046	0.00051	<0.00030
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved (mg/L)	<0.000010	<0.000010	0.000019	0.000021	0.000012
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.0011	0.0016	0.0010	0.0064	0.0051
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals Chromium, Hexavalent (ug/L)	<0.50	1.35	<0.50	0.52	<0.50
Methylmercury (as MeHg)-Dissolved (ug/L)	0.000060	0.000129 RRV	0.000147	0.000145	0.000184
Methylmercury (as MeHg)-Total (ug/L)	0.000072	<0.000020	0.000056	0.000399	0.000023

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2719501-11	L2719501-12	L2719501-13	L2719501-14	L2719501-15
Description	WATER	WATER	WATER	WATER	WATER
Sampled Date	26-JUN-22	26-JUN-22	26-JUN-22	27-JUN-22	27-JUN-22
Sampled Time	14:22	16:06	13:45	08:33	10:42
Client ID	AQF41	AQF45	AQF46	AQM28	AQM29C
Grouping / **Analyte**					
WATER					
Dissolved Metals Calcium (Ca)-Dissolved (mg/L)	2.73	2.78	6.99	5.40	2.44
Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved (mg/L)	0.00013	0.00012	<0.00010	0.00021	0.00010
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00056	<0.00010
Copper (Cu)-Dissolved (mg/L)	0.00062	0.00031	0.00115	0.00355	0.00092
Iron (Fe)-Dissolved (mg/L)	0.177	0.176	0.043	0.641	0.164
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	0.000062	<0.000050
Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved (mg/L)	0.748	0.786	1.44	1.14	0.645
Manganese (Mn)-Dissolved (mg/L)	0.00415	0.00238	0.00608	0.0269	0.00858
Mercury (Hg)-Dissolved (ug/L)	0.00216	0.00204	0.00149	0.00282	0.00112
Molybdenum (Mo)-Dissolved (mg/L)	0.000068	0.000102	0.000070	0.000072	<0.000050
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.0538	0.00348
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
Potassium (K)-Dissolved (mg/L)	0.506	0.489	0.549	0.723	0.499
Rubidium (Rb)-Dissolved (mg/L)	0.00094	0.00094	0.00070	0.00097	0.00090
Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000073	<0.000050	<0.000050	<0.000050
Silicon (Si)-Dissolved (mg/L)	1.89	1.90	0.332	2.46	2.07
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	0.934	0.911	0.842	1.22	0.904
Strontium (Sr)-Dissolved (mg/L)	0.0103	0.0106	0.0116	0.0154	0.0105
Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	2.12	<0.50
Tellurium (Te)-Dissolved (mg/L)	<0.00020	0.00023	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00017	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	0.00052	0.00056	0.00034	0.00076	<0.00030
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved (mg/L)	0.000022	0.000021	<0.000010	0.000022	0.000020
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.0023	0.0011	0.0035	0.0110	0.0019
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals Chromium, Hexavalent (ug/L)	<0.50	0.51	<0.50	0.57	<0.50
Methylmercury (as MeHg)-Dissolved (ug/L)	0.000088	0.000097	0.000076	0.000082	0.000124
Methylmercury (as MeHg)-Total (ug/L)	0.000061	0.000064	0.000116	0.000060	0.000051

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L2719501-16 WATER, Description: 27-JUN-22 14:57, Sampled Date/Time: AQF43	L2719501-17 WATER 27-JUN-22 15:19 AQF44	L2719501-18 WATER 27-JUN-22 QC-01	L2719501-19 WATER 27-JUN-22 TRIP BLANK	
WATER						
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	2.92	2.68	5.43	<0.050	
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Chromium (Cr)-Dissolved (mg/L)	0.00012	0.00013	0.00019	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	0.00056	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	0.00022	0.00136	0.00367	0.00024	
	Iron (Fe)-Dissolved (mg/L)	0.168	0.174	0.636	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000050	0.000074	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Magnesium (Mg)-Dissolved (mg/L)	0.814	0.759	1.13	<0.0050	
	Manganese (Mn)-Dissolved (mg/L)	0.00276	0.00264	0.0274	<0.00010	
	Mercury (Hg)-Dissolved (ug/L)	0.00175	0.00168	0.00181	<0.00050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.000081	0.000181 RRV	<0.000050	<0.000050	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.0539	0.00055	
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	
	Potassium (K)-Dissolved (mg/L)	0.668	0.628	0.726	<0.050	
	Rubidium (Rb)-Dissolved (mg/L)	0.00091	0.00094	0.00102	<0.00020	
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Silicon (Si)-Dissolved (mg/L)	1.92	1.99	2.45	<0.050	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	0.954	0.962	1.16	<0.050	
	Strontium (Sr)-Dissolved (mg/L)	0.0106	0.0104	0.0152	<0.00010	
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	2.34	<0.50	
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Tin (Sn)-Dissolved (mg/L)	0.00010	0.00019	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	0.00037	0.00041	0.00071	<0.00030	
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Uranium (U)-Dissolved (mg/L)	0.000019	0.000019	0.000022	<0.000010	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0045	0.0033	0.0125	0.0015	
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Speciated Metals	Chromium, Hexavalent (ug/L)	1.80	<0.50	<0.50	<0.50	
	Methylmercury (as MeHg)-Dissolved (ug/L)	0.000177	0.000059	<0.000020	<0.000020	
	Methylmercury (as MeHg)-Total (ug/L)	0.000056	0.000062	<0.000020	<0.000020	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Vanadium (V)-Total	B	L2719501-7
Matrix Spike	Silver (Ag)-Dissolved	MES	L2719501-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Dissolved Organic Carbon	MS-B	L2719501-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L2719501-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L2719501-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2719501-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2719501-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2719501-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2719501-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2719501-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2719501-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2719501-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2719501-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2719501-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2719501-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L2719501-16, -17
Matrix Spike	Barium (Ba)-Total	MS-B	L2719501-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L2719501-18, -19
Matrix Spike	Calcium (Ca)-Total	MS-B	L2719501-16, -17
Matrix Spike	Calcium (Ca)-Total	MS-B	L2719501-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2719501-18, -19
Matrix Spike	Copper (Cu)-Total	MS-B	L2719501-16, -17
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2719501-16, -17
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2719501-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2719501-18, -19
Matrix Spike	Potassium (K)-Total	MS-B	L2719501-18, -19
Matrix Spike	Sodium (Na)-Total	MS-B	L2719501-16, -17
Matrix Spike	Sodium (Na)-Total	MS-B	L2719501-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L2719501-18, -19
Matrix Spike	Strontium (Sr)-Total	MS-B	L2719501-16, -17
Matrix Spike	Strontium (Sr)-Total	MS-B	L2719501-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2719501-18, -19
Matrix Spike	Sulfur (S)-Total	MS-B	L2719501-16, -17
Matrix Spike	Sulfur (S)-Total	MS-B	L2719501-18, -19

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-TITR-TB	Water	Acidity	APHA 2310 B modified

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

Reference Information

ALK-CO3CO3-CALC-WP Water Alkalinity, Carbonate CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP Water Alkalinity, Bicarbonate CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP Water Alkalinity, Hydroxide CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP Water Alkalinity, Total (as CaCO3) APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BR-IC-N-WP Water Bromide in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

C-DOC-HTC-WP Water Dissolved Organic Carbon by Combustion APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

C-TOC-HTC-WP Water Total Organic Carbon by Combustion APHA 5310 B-WP

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-IC-N-WP Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-L-CFA-VA Water Low Level Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA Water Low level WAD Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

CR-CR6-PWQO-IC-WT Water Chromium +6 EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-SCREEN-WP Water Conductivity Screen (Internal Use Only) APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

F-IC-N-WP Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-U-CVAF-VA Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E

Reference Information

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

MEHG-D-GCAF-VA Water Diss. Methylmercury in Water by GCAFS EPA 1630 (mod)

This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".

MEHG-T-GCAF-VA Water Total Methylmercury in Water by GCAFS EPA 1630 (mod)

This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".

MET-D-CCMS-WP Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-WP Water Total Metals in Water by CRC ICPMS EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-TOTKJ-WP Water Total Kjeldahl Nitrogen APHA 4500 NorgD (modified)

Aqueous samples are digested in a block digester with sulfuric acid and copper sulfate as a catalyst. Total Kjeldahl Nitrogen is then analyzed using a discrete analyzer with colorimetric detection.

NH3-COL-WP Water Ammonia by colour APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-WP Water Nitrate+Nitrite CALCULATION

NO2-IC-N-WP Water Nitrite in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-N-WP Water Nitrate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP Water Phosphorus, Total APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

P-T-L-COL-WP Water Phosphorus, Total APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

SO4-IC-N-WP Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-LR-WP Water Total Suspended Solids APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 Œ 105°C.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Reference Information

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
TB	ALS ENVIRONMENTAL - THUNDER BAY, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Alamos Gold Inc.
C/O Stantec Consulting 500 - 311 Portage Avenue
Winnipeg MB R3B 2B9
Contact: KAREN MATHERS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACY-TITR-TB	**Water**							
Batch R5829042								
WG3749095-2 LCS								
Acidity (as CaCO3)			98.3		%		85-115	26-JUL-22
WG3749095-1 MB								
Acidity (as CaCO3)			2.2		mg/L		3	26-JUL-22
ALK-TITR-WP	**Water**							
Batch R5815536								
WG3746445-14 LCS								
Alkalinity, Total (as CaCO3)			103.3		%		85-115	05-JUL-22
WG3746445-9 LCS								
Alkalinity, Total (as CaCO3)			103.3		%		85-115	05-JUL-22
WG3746445-11 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-JUL-22
WG3746445-6 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-JUL-22
BR-IC-N-WP	**Water**							
Batch R5814860								
WG3745829-3 DUP		**L2719501-6**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	02-JUL-22
WG3745829-2 LCS								
Bromide (Br)			102.6		%		85-115	02-JUL-22
WG3745829-6 LCS								
Bromide (Br)			102.5		%		85-115	02-JUL-22
WG3745829-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	02-JUL-22
WG3745829-5 MB								
Bromide (Br)			<0.10		mg/L		0.1	02-JUL-22
WG3745829-4 MS		**L2719501-6**						
Bromide (Br)			104.8		%		75-125	02-JUL-22
C-DOC-HTC-WP	**Water**							
Batch R5829339								
WG3752695-3 DUP		**L2719501-1**						
Dissolved Organic Carbon		17.0	17.2		mg/L	0.9	20	27-JUL-22
WG3752695-2 LCS								
Dissolved Organic Carbon			101.8		%		80-120	27-JUL-22
WG3752695-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-JUL-22
WG3752695-4 MS		**L2719501-2**						
Dissolved Organic Carbon			N/A	MS-B	%		-	27-JUL-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	**Water**							
Batch R5829338								
WG3752757-3 DUP		**L2719501-3**						
Total Organic Carbon		21.8	22.5		mg/L	3.3	20	26-JUL-22
WG3752757-2 LCS								
Total Organic Carbon			101.1		%		80-120	26-JUL-22
WG3752757-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	26-JUL-22
WG3752757-4 MS		**L2719501-4**						
Total Organic Carbon			N/A	MS-B	%		-	26-JUL-22
CL-IC-N-WP	**Water**							
Batch R5814860								
WG3745829-3 DUP		**L2719501-6**						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	02-JUL-22
WG3745829-2 LCS								
Chloride (Cl)			99.4		%		90-110	02-JUL-22
WG3745829-6 LCS								
Chloride (Cl)			97.7		%		90-110	02-JUL-22
WG3745829-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	02-JUL-22
WG3745829-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	02-JUL-22
WG3745829-4 MS		**L2719501-6**						
Chloride (Cl)			103.1		%		75-125	02-JUL-22
CN-FREE-L-CFA-VA	**Water**							
Batch R5822695								
WG3749606-3 DUP		**L2719501-16**						
Cyanide, Free		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-JUL-22
WG3749606-2 LCS								
Cyanide, Free			95.2		%		80-120	16-JUL-22
WG3749606-1 MB								
Cyanide, Free			<0.0010		mg/L		0.001	16-JUL-22
WG3749606-4 MS		**L2719501-17**						
Cyanide, Free			100.1		%		75-125	16-JUL-22
CN-T-L-CFA-VA	**Water**							
Batch R5822695								
WG3749606-3 DUP		**L2719501-16**						
Cyanide, Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-JUL-22
WG3749606-2 LCS								
Cyanide, Total			86.5		%		80-120	16-JUL-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-T-L-CFA-VA	**Water**							
Batch R5822695								
WG3749606-1 MB								
Cyanide, Total			<0.0010		mg/L		0.001	16-JUL-22
WG3749606-4 MS		**L2719501-17**						
Cyanide, Total			91.2		%		75-125	16-JUL-22
CN-WAD-L-CFA-VA	**Water**							
Batch R5822695								
WG3749606-3 DUP		**L2719501-16**						
Cyanide, Weak Acid Diss		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-JUL-22
WG3749606-2 LCS								
Cyanide, Weak Acid Diss			93.9		%		80-120	16-JUL-22
WG3749606-1 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	16-JUL-22
WG3749606-4 MS		**L2719501-17**						
Cyanide, Weak Acid Diss			100.6		%		75-125	16-JUL-22
CR-CR6-PWQO-IC-WT	**Water**							
Batch R5822038								
WG3748840-2 LCS								
Chromium, Hexavalent			100.1		%		80-120	13-JUL-22
WG3748840-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	13-JUL-22
Batch R5822356								
WG3749227-2 LCS								
Chromium, Hexavalent			98.0		%		80-120	14-JUL-22
WG3749227-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	14-JUL-22
F-IC-N-WP	**Water**							
Batch R5814860								
WG3745829-3 DUP		**L2719501-6**						
Fluoride (F)		0.038	0.038		mg/L	0.1	20	02-JUL-22
WG3745829-2 LCS								
Fluoride (F)			101.9		%		90-110	02-JUL-22
WG3745829-6 LCS								
Fluoride (F)			100.6		%		90-110	02-JUL-22
WG3745829-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	02-JUL-22
WG3745829-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	02-JUL-22
WG3745829-4 MS		**L2719501-6**						

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP	**Water**							
Batch R5814860								
WG3745829-4 MS		**L2719501-6**						
Fluoride (F)			107.0		%		75-125	02-JUL-22
HG-D-U-CVAF-VA	**Water**							
Batch R5828127								
WG3751764-3 DUP		**L2719501-2**						
Mercury (Hg)-Dissolved		0.00240	0.00251		ug/L	4.7	20	23-JUL-22
WG3751764-2 LCS								
Mercury (Hg)-Dissolved			95.9		%		80-120	23-JUL-22
WG3751764-1 MB		**NP**						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	23-JUL-22
WG3751764-4 MS		**L2719501-18**						
Mercury (Hg)-Dissolved			97.6		%		70-130	23-JUL-22
HG-T-U-CVAF-VA	**Water**							
Batch R5827733								
WG3751362-3 DUP		**L2719501-2**						
Mercury (Hg)-Total		0.00232	0.00237		ug/L	2.2	20	21-JUL-22
WG3751362-2 LCS								
Mercury (Hg)-Total			102.3		%		80-120	21-JUL-22
WG3751362-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	21-JUL-22
WG3751362-4 MS		**L2719501-18**						
Mercury (Hg)-Total			89.5		%		70-130	21-JUL-22
MEHG-D-GCAF-VA	**Water**							
Batch R5835722								
WG3755558-2 DUP		**L2719501-10**						
Methylmercury (as MeHg)-Dissolved		0.000184	0.000180		ug/L	1.9	30	08-AUG-22
WG3755558-3 LCS								
Methylmercury (as MeHg)-Dissolved			77.1		%		70-130	08-AUG-22
WG3755558-1 MB								
Methylmercury (as MeHg)-Dissolved			<0.000020		ug/L		0.00002	08-AUG-22
WG3755558-4 MS		**L2719501-16**						
Methylmercury (as MeHg)-Dissolved			93.1		%		60-140	08-AUG-22
Batch R5840199								
WG3756176-3 LCS								
Methylmercury (as MeHg)-Dissolved			86.6		%		70-130	10-AUG-22
WG3756176-1 MB								
Methylmercury (as MeHg)-Dissolved			<0.000020		ug/L		0.00002	10-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MEHG-T-GCAF-VA	**Water**							
Batch R5835722								
WG3755152-2 DUP		**L2719501-1**						
Methylmercury (as MeHg)-Total		0.000337	0.000302		ug/L	11	30	05-AUG-22
WG3755553-2 DUP		**L2719501-12**						
Methylmercury (as MeHg)-Total		0.000064	0.000067		ug/L	5.2	30	08-AUG-22
WG3755152-3 LCS								
Methylmercury (as MeHg)-Total			90.0		%		70-130	05-AUG-22
WG3755553-3 LCS								
Methylmercury (as MeHg)-Total			97.9		%		70-130	08-AUG-22
WG3755558-3 LCS								
Methylmercury (as MeHg)-Total			77.1		%		70-130	09-AUG-22
WG3755152-1 MB								
Methylmercury (as MeHg)-Total			<0.000020		ug/L		0.00002	05-AUG-22
WG3755553-1 MB								
Methylmercury (as MeHg)-Total			<0.000020		ug/L		0.00002	08-AUG-22
WG3755558-1 MB								
Methylmercury (as MeHg)-Total			<0.000020		ug/L		0.00002	09-AUG-22
WG3755553-4 MS		**L2719501-3**						
Methylmercury (as MeHg)-Total			99.0		%		60-140	08-AUG-22
Batch R5840199								
WG3756176-3 LCS								
Methylmercury (as MeHg)-Total			86.6		%		70-130	10-AUG-22
WG3756176-1 MB								
Methylmercury (as MeHg)-Total			<0.000020		ug/L		0.00002	10-AUG-22
MET-D-CCMS-WP	**Water**							
Batch R5817477								
WG3746405-4 DUP		**L2719501-11**						
Aluminum (Al)-Dissolved		0.0334	0.0319		mg/L	4.5	20	06-JUL-22
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-JUL-22
Arsenic (As)-Dissolved		0.00015	0.00013		mg/L	12	20	06-JUL-22
Barium (Ba)-Dissolved		0.00950	0.00943		mg/L	0.7	20	06-JUL-22
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-JUL-22
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-JUL-22
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-JUL-22
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	06-JUL-22
Calcium (Ca)-Dissolved		2.73	2.75		mg/L	0.6	20	06-JUL-22
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-JUL-22
Chromium (Cr)-Dissolved		0.00013	0.00013		mg/L	0.5	20	06-JUL-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5817477								
WG3746405-4 DUP		**L2719501-11**						
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-JUL-22
Copper (Cu)-Dissolved		0.00062	0.00064		mg/L	2.4	20	06-JUL-22
Iron (Fe)-Dissolved		0.177	0.173		mg/L	2.0	20	06-JUL-22
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-JUL-22
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-JUL-22
Magnesium (Mg)-Dissolved		0.748	0.739		mg/L	1.3	20	06-JUL-22
Manganese (Mn)-Dissolved		0.00415	0.00422		mg/L	1.5	20	06-JUL-22
Molybdenum (Mo)-Dissolved		0.000068	0.000077		mg/L	12	20	06-JUL-22
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-JUL-22
Phosphorus (P)-Dissolved		<0.030	<0.030	RPD-NA	mg/L	N/A	20	06-JUL-22
Potassium (K)-Dissolved		0.506	0.504		mg/L	0.4	20	06-JUL-22
Rubidium (Rb)-Dissolved		0.00094	0.00092		mg/L	2.4	20	06-JUL-22
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-JUL-22
Silicon (Si)-Dissolved		1.89	1.91		mg/L	1.1	20	06-JUL-22
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-JUL-22
Sodium (Na)-Dissolved		0.934	0.933		mg/L	0.1	20	06-JUL-22
Strontium (Sr)-Dissolved		0.0103	0.0104		mg/L	0.5	20	06-JUL-22
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	06-JUL-22
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	06-JUL-22
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-JUL-22
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-JUL-22
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-JUL-22
Titanium (Ti)-Dissolved		0.00052	0.00047		mg/L	9.5	20	06-JUL-22
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-JUL-22
Uranium (U)-Dissolved		0.000022	0.000017	J	mg/L	0.000005	0.00002	06-JUL-22
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-JUL-22
Zinc (Zn)-Dissolved		0.0023	0.0034	J	mg/L	0.0011	0.002	06-JUL-22
Zirconium (Zr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	06-JUL-22
WG3746402-2 LCS								
Aluminum (Al)-Dissolved			102.2		%		80-120	06-JUL-22
Antimony (Sb)-Dissolved			97.9		%		80-120	06-JUL-22
Arsenic (As)-Dissolved			96.1		%		80-120	06-JUL-22
Barium (Ba)-Dissolved			98.3		%		80-120	06-JUL-22
Beryllium (Be)-Dissolved			99.8		%		80-120	06-JUL-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5817477								
WG3746402-2 LCS								
Bismuth (Bi)-Dissolved			93.0		%		80-120	06-JUL-22
Boron (B)-Dissolved			94.7		%		80-120	06-JUL-22
Cadmium (Cd)-Dissolved			97.9		%		80-120	06-JUL-22
Calcium (Ca)-Dissolved			102.7		%		80-120	06-JUL-22
Cesium (Cs)-Dissolved			102.9		%		80-120	06-JUL-22
Chromium (Cr)-Dissolved			99.1		%		80-120	06-JUL-22
Cobalt (Co)-Dissolved			97.8		%		80-120	06-JUL-22
Copper (Cu)-Dissolved			96.6		%		80-120	06-JUL-22
Iron (Fe)-Dissolved			97.0		%		80-120	06-JUL-22
Lead (Pb)-Dissolved			95.2		%		80-120	06-JUL-22
Lithium (Li)-Dissolved			100.8		%		80-120	06-JUL-22
Magnesium (Mg)-Dissolved			110.1		%		80-120	06-JUL-22
Manganese (Mn)-Dissolved			98.6		%		80-120	06-JUL-22
Molybdenum (Mo)-Dissolved			98.7		%		80-120	06-JUL-22
Nickel (Ni)-Dissolved			99.7		%		80-120	06-JUL-22
Phosphorus (P)-Dissolved			102.9		%		80-120	06-JUL-22
Potassium (K)-Dissolved			98.0		%		80-120	06-JUL-22
Rubidium (Rb)-Dissolved			99.8		%		80-120	06-JUL-22
Selenium (Se)-Dissolved			96.2		%		80-120	06-JUL-22
Silicon (Si)-Dissolved			98.1		%		80-120	06-JUL-22
Silver (Ag)-Dissolved			99.5		%		80-120	06-JUL-22
Sodium (Na)-Dissolved			102.8		%		80-120	06-JUL-22
Strontium (Sr)-Dissolved			98.7		%		80-120	06-JUL-22
Sulfur (S)-Dissolved			96.9		%		80-120	06-JUL-22
Tellurium (Te)-Dissolved			93.6		%		80-120	06-JUL-22
Thallium (Tl)-Dissolved			95.2		%		80-120	06-JUL-22
Thorium (Th)-Dissolved			90.6		%		80-120	06-JUL-22
Tin (Sn)-Dissolved			97.5		%		80-120	06-JUL-22
Titanium (Ti)-Dissolved			95.7		%		80-120	06-JUL-22
Tungsten (W)-Dissolved			94.8		%		80-120	06-JUL-22
Uranium (U)-Dissolved			89.2		%		80-120	06-JUL-22
Vanadium (V)-Dissolved			99.3		%		80-120	06-JUL-22
Zinc (Zn)-Dissolved			104.9		%		80-120	06-JUL-22
Zirconium (Zr)-Dissolved			89.0		%		80-120	06-JUL-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5817477								
WG3746405-2 LCS								
Aluminum (Al)-Dissolved			98.0		%		80-120	06-JUL-22
Antimony (Sb)-Dissolved			90.2		%		80-120	06-JUL-22
Arsenic (As)-Dissolved			90.3		%		80-120	06-JUL-22
Barium (Ba)-Dissolved			93.3		%		80-120	06-JUL-22
Beryllium (Be)-Dissolved			91.6		%		80-120	06-JUL-22
Bismuth (Bi)-Dissolved			94.4		%		80-120	06-JUL-22
Boron (B)-Dissolved			88.0		%		80-120	06-JUL-22
Cadmium (Cd)-Dissolved			90.3		%		80-120	06-JUL-22
Calcium (Ca)-Dissolved			97.1		%		80-120	06-JUL-22
Cesium (Cs)-Dissolved			94.9		%		80-120	06-JUL-22
Chromium (Cr)-Dissolved			91.9		%		80-120	06-JUL-22
Cobalt (Co)-Dissolved			90.3		%		80-120	06-JUL-22
Copper (Cu)-Dissolved			89.6		%		80-120	06-JUL-22
Iron (Fe)-Dissolved			90.6		%		80-120	06-JUL-22
Lead (Pb)-Dissolved			91.0		%		80-120	06-JUL-22
Lithium (Li)-Dissolved			87.2		%		80-120	06-JUL-22
Magnesium (Mg)-Dissolved			100.8		%		80-120	06-JUL-22
Manganese (Mn)-Dissolved			92.6		%		80-120	06-JUL-22
Molybdenum (Mo)-Dissolved			90.1		%		80-120	06-JUL-22
Nickel (Ni)-Dissolved			91.3		%		80-120	06-JUL-22
Phosphorus (P)-Dissolved			94.2		%		80-120	06-JUL-22
Potassium (K)-Dissolved			91.9		%		80-120	06-JUL-22
Rubidium (Rb)-Dissolved			91.0		%		80-120	06-JUL-22
Selenium (Se)-Dissolved			89.0		%		80-120	06-JUL-22
Silicon (Si)-Dissolved			94.0		%		80-120	06-JUL-22
Silver (Ag)-Dissolved			90.9		%		80-120	06-JUL-22
Sodium (Na)-Dissolved			94.2		%		80-120	06-JUL-22
Strontium (Sr)-Dissolved			90.9		%		80-120	06-JUL-22
Sulfur (S)-Dissolved			88.8		%		80-120	06-JUL-22
Tellurium (Te)-Dissolved			83.7		%		80-120	06-JUL-22
Thallium (Tl)-Dissolved			91.7		%		80-120	06-JUL-22
Thorium (Th)-Dissolved			90.1		%		80-120	06-JUL-22
Tin (Sn)-Dissolved			90.8		%		80-120	06-JUL-22
Titanium (Ti)-Dissolved			90.5		%		80-120	06-JUL-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5817477								
WG3746405-2 LCS								
Tungsten (W)-Dissolved			89.9		%		80-120	06-JUL-22
Uranium (U)-Dissolved			87.1		%		80-120	06-JUL-22
Vanadium (V)-Dissolved			93.2		%		80-120	06-JUL-22
Zinc (Zn)-Dissolved			99.9		%		80-120	06-JUL-22
Zirconium (Zr)-Dissolved			85.4		%		80-120	06-JUL-22
WG3746402-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-JUL-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-JUL-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-JUL-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	06-JUL-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-JUL-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	06-JUL-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-JUL-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-JUL-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-JUL-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-JUL-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-JUL-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-JUL-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-JUL-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	06-JUL-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-JUL-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	06-JUL-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-JUL-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-JUL-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-JUL-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-JUL-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5817477								
WG3746402-1 MB								
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	06-JUL-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	06-JUL-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-JUL-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-JUL-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-JUL-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-JUL-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-JUL-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	06-JUL-22
WG3746405-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-JUL-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-JUL-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-JUL-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	06-JUL-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-JUL-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	06-JUL-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-JUL-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-JUL-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-JUL-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-JUL-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-JUL-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-JUL-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-JUL-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	06-JUL-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-JUL-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5817477								
WG3746405-1 MB								
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	06-JUL-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-JUL-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-JUL-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-JUL-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-JUL-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	06-JUL-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	06-JUL-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-JUL-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-JUL-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	06-JUL-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-JUL-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-JUL-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-JUL-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	06-JUL-22
WG3746405-5 MS		**L2719501-11**						
Aluminum (Al)-Dissolved			100.5		%		70-130	06-JUL-22
Antimony (Sb)-Dissolved			102.1		%		70-130	06-JUL-22
Arsenic (As)-Dissolved			100.4		%		70-130	06-JUL-22
Barium (Ba)-Dissolved			101.8		%		70-130	06-JUL-22
Beryllium (Be)-Dissolved			102.6		%		70-130	06-JUL-22
Bismuth (Bi)-Dissolved			92.7		%		70-130	06-JUL-22
Boron (B)-Dissolved			95.7		%		70-130	06-JUL-22
Cadmium (Cd)-Dissolved			101.0		%		70-130	06-JUL-22
Calcium (Ca)-Dissolved			105.3		%		70-130	06-JUL-22
Cesium (Cs)-Dissolved			106.5		%		70-130	06-JUL-22
Chromium (Cr)-Dissolved			98.2		%		70-130	06-JUL-22
Cobalt (Co)-Dissolved			98.9		%		70-130	06-JUL-22
Copper (Cu)-Dissolved			97.7		%		70-130	06-JUL-22
Iron (Fe)-Dissolved			98.8		%		70-130	06-JUL-22
Lead (Pb)-Dissolved			100.7		%		70-130	06-JUL-22
Lithium (Li)-Dissolved			102.4		%		70-130	06-JUL-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5817477								
WG3746405-5 MS		**L2719501-11**						
Magnesium (Mg)-Dissolved			99.3		%		70-130	06-JUL-22
Manganese (Mn)-Dissolved			99.3		%		70-130	06-JUL-22
Molybdenum (Mo)-Dissolved			98.1		%		70-130	06-JUL-22
Nickel (Ni)-Dissolved			99.1		%		70-130	06-JUL-22
Phosphorus (P)-Dissolved			100.5		%		70-130	06-JUL-22
Potassium (K)-Dissolved			103.1		%		70-130	06-JUL-22
Rubidium (Rb)-Dissolved			105.8		%		70-130	06-JUL-22
Selenium (Se)-Dissolved			103.7		%		70-130	06-JUL-22
Silicon (Si)-Dissolved			101.7		%		70-130	06-JUL-22
Silver (Ag)-Dissolved			100.7		%		70-130	06-JUL-22
Sodium (Na)-Dissolved			102.1		%		70-130	06-JUL-22
Strontium (Sr)-Dissolved			104.2		%		70-130	06-JUL-22
Sulfur (S)-Dissolved			100.3		%		70-130	06-JUL-22
Tellurium (Te)-Dissolved			94.2		%		70-130	06-JUL-22
Thallium (Tl)-Dissolved			99.5		%		70-130	06-JUL-22
Thorium (Th)-Dissolved			103.7		%		70-130	06-JUL-22
Tin (Sn)-Dissolved			99.1		%		70-130	06-JUL-22
Titanium (Ti)-Dissolved			97.9		%		70-130	06-JUL-22
Tungsten (W)-Dissolved			97.6		%		70-130	06-JUL-22
Uranium (U)-Dissolved			99.5		%		70-130	06-JUL-22
Vanadium (V)-Dissolved			101.5		%		70-130	06-JUL-22
Zinc (Zn)-Dissolved			101.6		%		70-130	06-JUL-22
Zirconium (Zr)-Dissolved			99.2		%		70-130	06-JUL-22
MET-T-CCMS-WP	**Water**							
Batch R5816621								
WG3746127-2 LCS								
Aluminum (Al)-Total			104.5		%		80-120	05-JUL-22
Antimony (Sb)-Total			107.3		%		80-120	05-JUL-22
Barium (Ba)-Total			106.3		%		80-120	05-JUL-22
Beryllium (Be)-Total			108.3		%		80-120	05-JUL-22
Bismuth (Bi)-Total			101.1		%		80-120	05-JUL-22
Boron (B)-Total			105.9		%		80-120	05-JUL-22
Cadmium (Cd)-Total			105.8		%		80-120	05-JUL-22
Calcium (Ca)-Total			107.9		%		80-120	05-JUL-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5816621								
WG3746127-2 LCS								
Cesium (Cs)-Total			105.9		%		80-120	05-JUL-22
Chromium (Cr)-Total			105.5		%		80-120	05-JUL-22
Cobalt (Co)-Total			105.5		%		80-120	05-JUL-22
Copper (Cu)-Total			104.5		%		80-120	05-JUL-22
Iron (Fe)-Total			103.1		%		80-120	05-JUL-22
Lead (Pb)-Total			101.9		%		80-120	05-JUL-22
Lithium (Li)-Total			112.6		%		80-120	05-JUL-22
Magnesium (Mg)-Total			115.4		%		80-120	05-JUL-22
Manganese (Mn)-Total			103.3		%		80-120	05-JUL-22
Molybdenum (Mo)-Total			103.0		%		80-120	05-JUL-22
Nickel (Ni)-Total			104.8		%		80-120	05-JUL-22
Potassium (K)-Total			103.6		%		80-120	05-JUL-22
Phosphorus (P)-Total			107.0		%		80-120	05-JUL-22
Rubidium (Rb)-Total			102.6		%		80-120	05-JUL-22
Selenium (Se)-Total			105.2		%		80-120	05-JUL-22
Silicon (Si)-Total			100.1		%		80-120	05-JUL-22
Silver (Ag)-Total			104.0		%		80-120	05-JUL-22
Sodium (Na)-Total			107.7		%		80-120	05-JUL-22
Strontium (Sr)-Total			105.4		%		80-120	05-JUL-22
Sulfur (S)-Total			107.1		%		80-120	05-JUL-22
Tellurium (Te)-Total			98.0		%		80-120	05-JUL-22
Thallium (Tl)-Total			102.9		%		80-120	05-JUL-22
Thorium (Th)-Total			98.7		%		80-120	05-JUL-22
Tin (Sn)-Total			102.4		%		80-120	05-JUL-22
Titanium (Ti)-Total			100.5		%		80-120	05-JUL-22
Tungsten (W)-Total			100.2		%		80-120	05-JUL-22
Uranium (U)-Total			99.99		%		80-120	05-JUL-22
Vanadium (V)-Total			106.5		%		80-120	05-JUL-22
Zinc (Zn)-Total			105.5		%		80-120	05-JUL-22
Zirconium (Zr)-Total			94.4		%		80-120	05-JUL-22
WG3746140-2 LCS								
Aluminum (Al)-Total			101.2		%		80-120	05-JUL-22
Antimony (Sb)-Total			107.5		%		80-120	05-JUL-22
Barium (Ba)-Total			105.0		%		80-120	05-JUL-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5816621								
WG3746140-2 LCS								
Beryllium (Be)-Total			109.4		%		80-120	05-JUL-22
Bismuth (Bi)-Total			104.8		%		80-120	05-JUL-22
Boron (B)-Total			108.0		%		80-120	05-JUL-22
Cadmium (Cd)-Total			104.0		%		80-120	05-JUL-22
Calcium (Ca)-Total			110.2		%		80-120	05-JUL-22
Cesium (Cs)-Total			104.3		%		80-120	05-JUL-22
Chromium (Cr)-Total			102.4		%		80-120	05-JUL-22
Cobalt (Co)-Total			101.9		%		80-120	05-JUL-22
Copper (Cu)-Total			101.3		%		80-120	05-JUL-22
Iron (Fe)-Total			102.3		%		80-120	05-JUL-22
Lead (Pb)-Total			106.0		%		80-120	05-JUL-22
Lithium (Li)-Total			118.2		%		80-120	05-JUL-22
Magnesium (Mg)-Total			112.5		%		80-120	05-JUL-22
Manganese (Mn)-Total			100.4		%		80-120	05-JUL-22
Molybdenum (Mo)-Total			100.4		%		80-120	05-JUL-22
Nickel (Ni)-Total			101.5		%		80-120	05-JUL-22
Potassium (K)-Total			99.6		%		80-120	05-JUL-22
Phosphorus (P)-Total			102.4		%		80-120	05-JUL-22
Rubidium (Rb)-Total			98.9		%		80-120	05-JUL-22
Selenium (Se)-Total			102.2		%		80-120	05-JUL-22
Silicon (Si)-Total			102.9		%		80-120	05-JUL-22
Silver (Ag)-Total			102.5		%		80-120	05-JUL-22
Sodium (Na)-Total			110.4		%		80-120	05-JUL-22
Strontium (Sr)-Total			102.2		%		80-120	05-JUL-22
Sulfur (S)-Total			103.8		%		80-120	05-JUL-22
Tellurium (Te)-Total			90.4		%		80-120	05-JUL-22
Thallium (Tl)-Total			106.8		%		80-120	05-JUL-22
Thorium (Th)-Total			98.5		%		80-120	05-JUL-22
Tin (Sn)-Total			102.6		%		80-120	05-JUL-22
Titanium (Ti)-Total			98.1		%		80-120	05-JUL-22
Tungsten (W)-Total			102.0		%		80-120	05-JUL-22
Uranium (U)-Total			104.3		%		80-120	05-JUL-22
Vanadium (V)-Total			104.5		%		80-120	05-JUL-22
Zinc (Zn)-Total			104.6		%		80-120	05-JUL-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5816621								
WG3746140-2 LCS								
Zirconium (Zr)-Total			91.7		%		80-120	05-JUL-22
WG3746127-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	05-JUL-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	05-JUL-22
Boron (B)-Total			<0.010		mg/L		0.01	05-JUL-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	05-JUL-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	05-JUL-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	05-JUL-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	05-JUL-22
Iron (Fe)-Total			<0.010		mg/L		0.01	05-JUL-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	05-JUL-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	05-JUL-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	05-JUL-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	05-JUL-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	05-JUL-22
Potassium (K)-Total			<0.050		mg/L		0.05	05-JUL-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	05-JUL-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	05-JUL-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	05-JUL-22
Silicon (Si)-Total			<0.10		mg/L		0.1	05-JUL-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	05-JUL-22
Sodium (Na)-Total			<0.050		mg/L		0.05	05-JUL-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	05-JUL-22
Sulfur (S)-Total			<0.50		mg/L		0.5	05-JUL-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	05-JUL-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	05-JUL-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	05-JUL-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5816621								
WG3746127-1 MB								
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	05-JUL-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	05-JUL-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	05-JUL-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	05-JUL-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	05-JUL-22
WG3746140-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	05-JUL-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	05-JUL-22
Boron (B)-Total			<0.010		mg/L		0.01	05-JUL-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	05-JUL-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	05-JUL-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	05-JUL-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	05-JUL-22
Iron (Fe)-Total			<0.010		mg/L		0.01	05-JUL-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	05-JUL-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	05-JUL-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	05-JUL-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	05-JUL-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	05-JUL-22
Potassium (K)-Total			<0.050		mg/L		0.05	05-JUL-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	05-JUL-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	05-JUL-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	05-JUL-22
Silicon (Si)-Total			<0.10		mg/L		0.1	05-JUL-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	05-JUL-22
Sodium (Na)-Total			<0.050		mg/L		0.05	05-JUL-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	05-JUL-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5816621								
WG3746140-1 MB								
Sulfur (S)-Total			<0.50		mg/L		0.5	05-JUL-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	05-JUL-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	05-JUL-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	05-JUL-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	05-JUL-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	05-JUL-22
Vanadium (V)-Total			0.00051	B	mg/L		0.0005	05-JUL-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	05-JUL-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	05-JUL-22
Batch R5817477								
WG3746393-2 LCS								
Aluminum (Al)-Total			104.9		%		80-120	06-JUL-22
Antimony (Sb)-Total			107.7		%		80-120	06-JUL-22
Barium (Ba)-Total			103.8		%		80-120	06-JUL-22
Beryllium (Be)-Total			103.8		%		80-120	06-JUL-22
Bismuth (Bi)-Total			102.8		%		80-120	06-JUL-22
Boron (B)-Total			100.5		%		80-120	06-JUL-22
Cadmium (Cd)-Total			104.1		%		80-120	06-JUL-22
Calcium (Ca)-Total			106.2		%		80-120	06-JUL-22
Cesium (Cs)-Total			103.8		%		80-120	06-JUL-22
Chromium (Cr)-Total			104.2		%		80-120	06-JUL-22
Cobalt (Co)-Total			103.4		%		80-120	06-JUL-22
Copper (Cu)-Total			103.2		%		80-120	06-JUL-22
Iron (Fe)-Total			100.8		%		80-120	06-JUL-22
Lead (Pb)-Total			101.9		%		80-120	06-JUL-22
Lithium (Li)-Total			100.7		%		80-120	06-JUL-22
Magnesium (Mg)-Total			114.2		%		80-120	06-JUL-22
Manganese (Mn)-Total			103.4		%		80-120	06-JUL-22
Molybdenum (Mo)-Total			101.8		%		80-120	06-JUL-22
Nickel (Ni)-Total			102.8		%		80-120	06-JUL-22
Potassium (K)-Total			98.9		%		80-120	06-JUL-22
Phosphorus (P)-Total			103.8		%		80-120	06-JUL-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5817477								
WG3746393-2 LCS								
Rubidium (Rb)-Total			105.7		%		80-120	06-JUL-22
Selenium (Se)-Total			106.1		%		80-120	06-JUL-22
Silicon (Si)-Total			102.2		%		80-120	06-JUL-22
Silver (Ag)-Total			102.1		%		80-120	06-JUL-22
Sodium (Na)-Total			107.0		%		80-120	06-JUL-22
Strontium (Sr)-Total			98.0		%		80-120	06-JUL-22
Sulfur (S)-Total			88.6		%		80-120	06-JUL-22
Tellurium (Te)-Total			101.1		%		80-120	06-JUL-22
Thallium (Tl)-Total			101.3		%		80-120	06-JUL-22
Thorium (Th)-Total			99.8		%		80-120	06-JUL-22
Tin (Sn)-Total			102.7		%		80-120	06-JUL-22
Titanium (Ti)-Total			99.9		%		80-120	06-JUL-22
Tungsten (W)-Total			100.6		%		80-120	06-JUL-22
Uranium (U)-Total			99.0		%		80-120	06-JUL-22
Vanadium (V)-Total			104.2		%		80-120	06-JUL-22
Zinc (Zn)-Total			106.8		%		80-120	06-JUL-22
Zirconium (Zr)-Total			91.9		%		80-120	06-JUL-22
WG3746393-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	06-JUL-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	06-JUL-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	06-JUL-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	06-JUL-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	06-JUL-22
Boron (B)-Total			<0.010		mg/L		0.01	06-JUL-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	06-JUL-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	06-JUL-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	06-JUL-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	06-JUL-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	06-JUL-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	06-JUL-22
Iron (Fe)-Total			<0.010		mg/L		0.01	06-JUL-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	06-JUL-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	06-JUL-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	06-JUL-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5817477								
WG3746393-1 MB								
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	06-JUL-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	06-JUL-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	06-JUL-22
Potassium (K)-Total			<0.050		mg/L		0.05	06-JUL-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	06-JUL-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	06-JUL-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	06-JUL-22
Silicon (Si)-Total			<0.10		mg/L		0.1	06-JUL-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	06-JUL-22
Sodium (Na)-Total			<0.050		mg/L		0.05	06-JUL-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	06-JUL-22
Sulfur (S)-Total			<0.50		mg/L		0.5	06-JUL-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	06-JUL-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	06-JUL-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	06-JUL-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	06-JUL-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	06-JUL-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	06-JUL-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	06-JUL-22
Vanadium (V)-Total			0.00050		mg/L		0.0005	06-JUL-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	06-JUL-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	06-JUL-22
N-TOTKJ-WP	**Water**							
Batch R5818616								
WG3747261-7 DUP		**L2719501-13**						
Total Kjeldahl Nitrogen		0.54	0.53		mg/L	2.8	20	08-JUL-22
WG3747261-2 LCS								
Total Kjeldahl Nitrogen			105.9		%		75-125	08-JUL-22
WG3747261-6 LCS								
Total Kjeldahl Nitrogen			96.1		%		75-125	08-JUL-22
WG3747261-1 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	08-JUL-22
WG3747261-5 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	08-JUL-22
WG3747261-8 MS		**L2719501-13**						

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
N-TOTKJ-WP	**Water**							
Batch R5818616								
WG3747261-8 MS		**L2719501-13**						
Total Kjeldahl Nitrogen			105.2		%		70-130	08-JUL-22
NH3-COL-WP	**Water**							
Batch R5827665								
WG3750748-2 LCS								
Ammonia, Total (as N)			100.6		%		85-115	18-JUL-22
WG3750748-6 LCS								
Ammonia, Total (as N)			100.5		%		85-115	18-JUL-22
WG3750748-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	18-JUL-22
WG3750748-5 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	18-JUL-22
NO2-IC-N-WP	**Water**							
Batch R5814860								
WG3745829-3 DUP		**L2719501-6**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-JUL-22
WG3745829-2 LCS								
Nitrite (as N)			99.3		%		90-110	02-JUL-22
WG3745829-6 LCS								
Nitrite (as N)			97.9		%		90-110	02-JUL-22
WG3745829-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	02-JUL-22
WG3745829-5 MB								
Nitrite (as N)			<0.010		mg/L		0.01	02-JUL-22
WG3745829-4 MS		**L2719501-6**						
Nitrite (as N)			103.0		%		75-125	02-JUL-22
NO3-IC-N-WP	**Water**							
Batch R5814860								
WG3745829-3 DUP		**L2719501-6**						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	02-JUL-22
WG3745829-2 LCS								
Nitrate (as N)			100.2		%		90-110	02-JUL-22
WG3745829-6 LCS								
Nitrate (as N)			98.6		%		90-110	02-JUL-22
WG3745829-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	02-JUL-22
WG3745829-5 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-WP	**Water**							
Batch R5814860								
WG3745829-5 MB								
Nitrate (as N)			<0.020		mg/L		0.02	02-JUL-22
WG3745829-4 MS		**L2719501-6**						
Nitrate (as N)			105.1		%		75-125	02-JUL-22
P-T-COL-WP	**Water**							
Batch R5830877								
WG3753160-15 DUP		**L2719501-18**						
Phosphorus (P)-Total		0.0181	0.0184		mg/L	1.6	20	29-JUL-22
WG3753160-10 LCS								
Phosphorus (P)-Total			97.1		%		80-120	29-JUL-22
WG3753160-14 LCS								
Phosphorus (P)-Total			97.8		%		80-120	29-JUL-22
WG3753160-13 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	29-JUL-22
WG3753160-9 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	29-JUL-22
P-T-L-COL-WP	**Water**							
Batch R5834279								
WG3753971-2 LCS								
Phosphorus (P)-Total			88.8		%		80-120	03-AUG-22
WG3753971-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	03-AUG-22
SO4-IC-N-WP	**Water**							
Batch R5814860								
WG3745829-3 DUP		**L2719501-6**						
Sulfate (SO4)		0.76	0.77		mg/L	0.4	20	02-JUL-22
WG3745829-2 LCS								
Sulfate (SO4)			101.0		%		90-110	02-JUL-22
WG3745829-6 LCS								
Sulfate (SO4)			99.8		%		90-110	02-JUL-22
WG3745829-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	02-JUL-22
WG3745829-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	02-JUL-22
WG3745829-4 MS		**L2719501-6**						
Sulfate (SO4)			105.4		%		75-125	02-JUL-22
SOLIDS-TOTSUS-LR-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TOTSUS-LR-WP	**Water**							
Batch R5815819								
WG3745694-6 DUP		**L2719501-12**						
Total Suspended Solids		2.8	3.2		mg/L	11	20	04-JUL-22
WG3745694-2 LCS								
Total Suspended Solids			99.8		%		85-115	04-JUL-22
WG3745694-5 LCS								
Total Suspended Solids			99.1		%		85-115	04-JUL-22
WG3745694-1 MB								
Total Suspended Solids			<1.0		mg/L		1	04-JUL-22
WG3745694-4 MB								
Total Suspended Solids			<1.0		mg/L		1	04-JUL-22

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Total Suspended Solids							
	1	25-JUN-22 11:53	04-JUL-22 12:00	7	9	days	EHT
	2	25-JUN-22 12:26	04-JUL-22 12:00	7	9	days	EHT
	3	25-JUN-22 13:03	04-JUL-22 12:00	7	9	days	EHT
	4	25-JUN-22 13:30	04-JUL-22 12:00	7	9	days	EHT
	5	25-JUN-22 11:11	04-JUL-22 12:00	7	9	days	EHT
	6	25-JUN-22 11:33	04-JUL-22 12:00	7	9	days	EHT
	7	25-JUN-22 14:20	04-JUL-22 12:00	7	9	days	EHT
	8	26-JUN-22 08:45	04-JUL-22 12:00	7	8	days	EHT
	9	26-JUN-22 09:24	04-JUL-22 12:00	7	8	days	EHT
	10	26-JUN-22 12:23	04-JUL-22 12:00	7	8	days	EHT
	11	26-JUN-22 14:22	04-JUL-22 12:00	7	8	days	EHT
	12	26-JUN-22 16:06	04-JUL-22 12:00	7	8	days	EHT
	13	26-JUN-22 13:45	04-JUL-22 12:00	7	8	days	EHT
Anions and Nutrients							
Acidity							
	1	25-JUN-22 11:53	13-JUL-22 19:00	14	18	days	EHT
	2	25-JUN-22 12:26	13-JUL-22 19:00	14	18	days	EHT
	3	25-JUN-22 13:03	13-JUL-22 19:00	14	18	days	EHT
	4	25-JUN-22 13:30	13-JUL-22 19:00	14	18	days	EHT
	5	25-JUN-22 11:11	13-JUL-22 19:00	14	18	days	EHT
	6	25-JUN-22 11:33	13-JUL-22 19:00	14	18	days	EHT
	7	25-JUN-22 14:20	13-JUL-22 19:00	14	18	days	EHT
	8	26-JUN-22 08:45	13-JUL-22 19:00	14	17	days	EHT
	9	26-JUN-22 09:24	13-JUL-22 19:00	14	17	days	EHT
	10	26-JUN-22 12:23	13-JUL-22 19:00	14	17	days	EHT
	11	26-JUN-22 14:22	13-JUL-22 19:00	14	17	days	EHT
	12	26-JUN-22 16:06	13-JUL-22 19:00	14	17	days	EHT
	13	26-JUN-22 13:45	13-JUL-22 19:00	14	17	days	EHT
	14	27-JUN-22 08:33	13-JUL-22 19:00	14	16	days	EHT
	15	27-JUN-22 10:42	13-JUL-22 19:00	14	16	days	EHT
	16	27-JUN-22 14:57	13-JUL-22 19:00	14	16	days	EHT
	17	27-JUN-22 15:19	13-JUL-22 19:00	14	16	days	EHT
	18	27-JUN-22	13-JUL-22 19:00	14	16	days	EHT
	19	27-JUN-22	13-JUL-22 19:00	14	16	days	EHT
Nitrate in Water by IC							
	1	25-JUN-22 11:53	02-JUL-22 10:00	3	7	days	EHTR
	2	25-JUN-22 12:26	02-JUL-22 10:00	3	7	days	EHTR
	3	25-JUN-22 13:03	02-JUL-22 10:00	3	7	days	EHTR
	4	25-JUN-22 13:30	02-JUL-22 10:00	3	7	days	EHTR
	5	25-JUN-22 11:11	02-JUL-22 10:00	3	7	days	EHTR
	6	25-JUN-22 11:33	02-JUL-22 10:00	3	7	days	EHTR
	7	25-JUN-22 14:20	02-JUL-22 10:00	3	7	days	EHTR
	8	26-JUN-22 08:45	02-JUL-22 10:00	3	6	days	EHTR
	9	26-JUN-22 09:24	02-JUL-22 10:00	3	6	days	EHTR
	10	26-JUN-22 12:23	02-JUL-22 10:00	3	6	days	EHTR
	11	26-JUN-22 14:22	02-JUL-22 10:00	3	6	days	EHTR
	12	26-JUN-22 16:06	02-JUL-22 10:00	3	6	days	EHTR
	13	26-JUN-22 13:45	02-JUL-22 10:00	3	6	days	EHTR
	14	27-JUN-22 08:33	02-JUL-22 10:00	3	5	days	EHTR
	15	27-JUN-22 10:42	02-JUL-22 10:00	3	5	days	EHTR
	16	27-JUN-22 14:57	02-JUL-22 10:00	3	5	days	EHTL
	17	27-JUN-22 15:19	02-JUL-22 10:00	3	5	days	EHTL
	18	27-JUN-22	02-JUL-22 10:00	3	5	days	EHTR
	19	27-JUN-22	02-JUL-22 10:00	3	5	days	EHTR
Nitrite in Water by IC							
	1	25-JUN-22 11:53	02-JUL-22 10:00	3	7	days	EHTR

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Anions and Nutrients							
Nitrite in Water by IC							
	2	25-JUN-22 12:26	02-JUL-22 10:00	3	7	days	EHTR
	3	25-JUN-22 13:03	02-JUL-22 10:00	3	7	days	EHTR
	4	25-JUN-22 13:30	02-JUL-22 10:00	3	7	days	EHTR
	5	25-JUN-22 11:11	02-JUL-22 10:00	3	7	days	EHTR
	6	25-JUN-22 11:33	02-JUL-22 10:00	3	7	days	EHTR
	7	25-JUN-22 14:20	02-JUL-22 10:00	3	7	days	EHTR
	8	26-JUN-22 08:45	02-JUL-22 10:00	3	6	days	EHTR
	9	26-JUN-22 09:24	02-JUL-22 10:00	3	6	days	EHTR
	10	26-JUN-22 12:23	02-JUL-22 10:00	3	6	days	EHTR
	11	26-JUN-22 14:22	02-JUL-22 10:00	3	6	days	EHTR
	12	26-JUN-22 16:06	02-JUL-22 10:00	3	6	days	EHTR
	13	26-JUN-22 13:45	02-JUL-22 10:00	3	6	days	EHTR
	14	27-JUN-22 08:33	02-JUL-22 10:00	3	5	days	EHTR
	15	27-JUN-22 10:42	02-JUL-22 10:00	3	5	days	EHTR
	16	27-JUN-22 14:57	02-JUL-22 10:00	3	5	days	EHTL
	17	27-JUN-22 15:19	02-JUL-22 10:00	3	5	days	EHTL
	18	27-JUN-22	02-JUL-22 10:00	3	5	days	EHTR
	19	27-JUN-22	02-JUL-22 10:00	3	5	days	EHTR
Phosphorus, Total							
	1	25-JUN-22 11:53	29-JUL-22 10:00	28	34	days	EHT
	2	25-JUN-22 12:26	29-JUL-22 10:00	28	34	days	EHT
	3	25-JUN-22 13:03	29-JUL-22 10:00	28	34	days	EHT
	4	25-JUN-22 13:30	29-JUL-22 10:00	28	34	days	EHT
	5	25-JUN-22 11:11	29-JUL-22 10:00	28	34	days	EHT
	6	25-JUN-22 11:33	29-JUL-22 10:00	28	34	days	EHT
	7	25-JUN-22 14:20	29-JUL-22 10:00	28	34	days	EHT
	8	26-JUN-22 08:45	29-JUL-22 10:00	28	33	days	EHT
	9	26-JUN-22 09:24	29-JUL-22 10:00	28	33	days	EHT
	10	26-JUN-22 12:23	29-JUL-22 10:00	28	33	days	EHT
	11	26-JUN-22 14:22	29-JUL-22 10:00	28	33	days	EHT
	12	26-JUN-22 16:06	29-JUL-22 10:00	28	33	days	EHT
	13	26-JUN-22 13:45	29-JUL-22 10:00	28	33	days	EHT
	14	27-JUN-22 08:33	29-JUL-22 10:00	28	32	days	EHT
	15	27-JUN-22 10:42	29-JUL-22 10:00	28	32	days	EHT
	16	27-JUN-22 14:57	29-JUL-22 10:00	28	32	days	EHT
	17	27-JUN-22 15:19	29-JUL-22 10:00	28	32	days	EHT
	18	27-JUN-22	29-JUL-22 10:00	28	32	days	EHT
	19	27-JUN-22	29-JUL-22 10:00	28	32	days	EHT
Phosphorus, Total							
	7	25-JUN-22 14:20	03-AUG-22 09:00	28	39	days	EHT
	19	27-JUN-22	03-AUG-22 09:00	28	37	days	EHT
Cyanides							
Low Level Free Cyanide in water by CFA							
	1	25-JUN-22 11:53	16-JUL-22 13:23	14	21	days	EHT
	2	25-JUN-22 12:26	16-JUL-22 13:23	14	21	days	EHT
	3	25-JUN-22 13:03	16-JUL-22 13:23	14	21	days	EHT
	4	25-JUN-22 13:30	16-JUL-22 13:23	14	21	days	EHT
	5	25-JUN-22 11:11	16-JUL-22 13:23	14	21	days	EHT
	6	25-JUN-22 11:33	16-JUL-22 13:23	14	21	days	EHT
	7	25-JUN-22 14:20	16-JUL-22 13:23	14	21	days	EHT
	8	26-JUN-22 08:45	16-JUL-22 13:23	14	20	days	EHT
	9	26-JUN-22 09:24	16-JUL-22 13:23	14	20	days	EHT
	10	26-JUN-22 12:23	16-JUL-22 13:23	14	20	days	EHT
	11	26-JUN-22 14:22	16-JUL-22 13:23	14	20	days	EHT
	12	26-JUN-22 16:06	16-JUL-22 13:23	14	20	days	EHT
	13	26-JUN-22 13:45	16-JUL-22 13:23	14	20	days	EHT

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Cyanides							
Low Level Free Cyanide in water by CFA							
	14	27-JUN-22 08:33	16-JUL-22 13:23	14	19	days	EHT
	15	27-JUN-22 10:42	16-JUL-22 13:23	14	19	days	EHT
	16	27-JUN-22 14:57	16-JUL-22 13:23	14	19	days	EHT
	17	27-JUN-22 15:19	16-JUL-22 13:23	14	19	days	EHT
	18	27-JUN-22	16-JUL-22 13:23	14	19	days	EHT
	19	27-JUN-22	16-JUL-22 13:23	14	19	days	EHT
Low Level Total Cyanide in water by CFA							
	1	25-JUN-22 11:53	16-JUL-22 13:23	14	21	days	EHT
	2	25-JUN-22 12:26	16-JUL-22 13:23	14	21	days	EHT
	3	25-JUN-22 13:03	16-JUL-22 13:23	14	21	days	EHT
	4	25-JUN-22 13:30	16-JUL-22 13:23	14	21	days	EHT
	5	25-JUN-22 11:11	16-JUL-22 13:23	14	21	days	EHT
	6	25-JUN-22 11:33	16-JUL-22 13:23	14	21	days	EHT
	7	25-JUN-22 14:20	16-JUL-22 13:23	14	21	days	EHT
	8	26-JUN-22 08:45	16-JUL-22 13:23	14	20	days	EHT
	9	26-JUN-22 09:24	16-JUL-22 13:23	14	20	days	EHT
	10	26-JUN-22 12:23	16-JUL-22 13:23	14	20	days	EHT
	11	26-JUN-22 14:22	16-JUL-22 13:23	14	20	days	EHT
	12	26-JUN-22 16:06	16-JUL-22 13:23	14	20	days	EHT
	13	26-JUN-22 13:45	16-JUL-22 13:23	14	20	days	EHT
	14	27-JUN-22 08:33	16-JUL-22 13:23	14	19	days	EHT
	15	27-JUN-22 10:42	16-JUL-22 13:23	14	19	days	EHT
	16	27-JUN-22 14:57	16-JUL-22 13:23	14	19	days	EHT
	17	27-JUN-22 15:19	16-JUL-22 13:23	14	19	days	EHT
	18	27-JUN-22	16-JUL-22 13:23	14	19	days	EHT
	19	27-JUN-22	16-JUL-22 13:23	14	19	days	EHT
Low level WAD Cyanide in water by CFA							
	1	25-JUN-22 11:53	16-JUL-22 13:23	14	21	days	EHT
	2	25-JUN-22 12:26	16-JUL-22 13:23	14	21	days	EHT
	3	25-JUN-22 13:03	16-JUL-22 13:23	14	21	days	EHT
	4	25-JUN-22 13:30	16-JUL-22 13:23	14	21	days	EHT
	5	25-JUN-22 11:11	16-JUL-22 13:23	14	21	days	EHT
	6	25-JUN-22 11:33	16-JUL-22 13:23	14	21	days	EHT
	7	25-JUN-22 14:20	16-JUL-22 13:23	14	21	days	EHT
	8	26-JUN-22 08:45	16-JUL-22 13:23	14	20	days	EHT
	9	26-JUN-22 09:24	16-JUL-22 13:23	14	20	days	EHT
	10	26-JUN-22 12:23	16-JUL-22 13:23	14	20	days	EHT
	11	26-JUN-22 14:22	16-JUL-22 13:23	14	20	days	EHT
	12	26-JUN-22 16:06	16-JUL-22 13:23	14	20	days	EHT
	13	26-JUN-22 13:45	16-JUL-22 13:23	14	20	days	EHT
	14	27-JUN-22 08:33	16-JUL-22 13:23	14	19	days	EHT
	15	27-JUN-22 10:42	16-JUL-22 13:23	14	19	days	EHT
	16	27-JUN-22 14:57	16-JUL-22 13:23	14	19	days	EHT
	17	27-JUN-22 15:19	16-JUL-22 13:23	14	19	days	EHT
	18	27-JUN-22	16-JUL-22 13:23	14	19	days	EHT
	19	27-JUN-22	16-JUL-22 13:23	14	19	days	EHT
Organic / Inorganic Carbon							
Dissolved Organic Carbon by Combustion							
	1	25-JUN-22 11:53	27-JUL-22 15:00	28	32	days	EHT
	2	25-JUN-22 12:26	27-JUL-22 15:00	28	32	days	EHT
	3	25-JUN-22 13:03	27-JUL-22 15:00	28	32	days	EHT
	4	25-JUN-22 13:30	27-JUL-22 15:00	28	32	days	EHT
	5	25-JUN-22 11:11	27-JUL-22 15:00	28	32	days	EHT
	6	25-JUN-22 11:33	27-JUL-22 15:00	28	32	days	EHT
	7	25-JUN-22 14:20	27-JUL-22 15:00	28	32	days	EHT
	8	26-JUN-22 08:45	27-JUL-22 15:00	28	31	days	EHT

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Organic / Inorganic Carbon							
Dissolved Organic Carbon by Combustion							
	9	26-JUN-22 09:24	27-JUL-22 15:00	28	31	days	EHT
	10	26-JUN-22 12:23	27-JUL-22 15:00	28	31	days	EHT
	11	26-JUN-22 14:22	27-JUL-22 15:00	28	31	days	EHT
	12	26-JUN-22 16:06	27-JUL-22 15:00	28	31	days	EHT
	13	26-JUN-22 13:45	27-JUL-22 15:00	28	31	days	EHT
	14	27-JUN-22 08:33	27-JUL-22 15:00	28	30	days	EHT
	15	27-JUN-22 10:42	27-JUL-22 15:00	28	30	days	EHT
	16	27-JUN-22 14:57	27-JUL-22 15:00	28	30	days	EHT
	17	27-JUN-22 15:19	27-JUL-22 15:00	28	30	days	EHT
	18	27-JUN-22	27-JUL-22 15:00	28	30	days	EHT
	19	27-JUN-22	27-JUL-22 15:00	28	30	days	EHT
Total Organic Carbon by Combustion							
	1	25-JUN-22 11:53	26-JUL-22 15:00	28	31	days	EHT
	2	25-JUN-22 12:26	26-JUL-22 15:00	28	31	days	EHT
	3	25-JUN-22 13:03	26-JUL-22 15:00	28	31	days	EHT
	4	25-JUN-22 13:30	26-JUL-22 15:00	28	31	days	EHT
	5	25-JUN-22 11:11	26-JUL-22 15:00	28	31	days	EHT
	6	25-JUN-22 11:33	26-JUL-22 15:00	28	31	days	EHT
	7	25-JUN-22 14:20	26-JUL-22 15:00	28	31	days	EHT
	8	26-JUN-22 08:45	26-JUL-22 15:00	28	30	days	EHT
	9	26-JUN-22 09:24	26-JUL-22 15:00	28	30	days	EHT
	10	26-JUN-22 12:23	26-JUL-22 15:00	28	30	days	EHT
	11	26-JUN-22 14:22	26-JUL-22 15:00	28	30	days	EHT
	12	26-JUN-22 16:06	26-JUL-22 15:00	28	30	days	EHT
	13	26-JUN-22 13:45	26-JUL-22 15:00	28	30	days	EHT
	14	27-JUN-22 08:33	26-JUL-22 15:00	28	29	days	EHT
	15	27-JUN-22 10:42	26-JUL-22 15:00	28	29	days	EHT
	16	27-JUN-22 14:57	26-JUL-22 15:00	28	29	days	EHT
	17	27-JUN-22 15:19	26-JUL-22 15:00	28	29	days	EHT
	18	27-JUN-22	26-JUL-22 15:00	28	29	days	EHT
	19	27-JUN-22	26-JUL-22 15:00	28	29	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2719501 were received on 30-JUN-22 12:02.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody

L2719501-COFC

COC Number: 22 -

Page 2 of 2

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Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	Stantec Consulting	Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)	☑ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Karen Mathers	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
Phone:	204-928-7621	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
Street:	500 - 311 Portage Ave	Email 1 or Fax Karen.Mathers@Stantec.com	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
City/Province:	Winnipeg, MB	Email 2 Brad.Horne@stantec.com	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.
Postal Code:	R3B 2B9	Email 3 Jeremy.Sackrison@stantec.com	Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.
Invoice To	Same as Report To ☐ YES ☑ NO	Invoice Recipients	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	For all tests with rush TATs requested, please contact your AM to confirm availability.
Company:	Alamos Gold	Email 1 or Fax	
Contact:		Email 2	

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q88846	AFE/Cost Center:	PO#
Job #:	ALAMOS	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (ALS use only):		ALS Contact: J. Adlmaier	Sampler: BG

Analysis Request

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	HG-D-U-CVAF-VA	HG-T-U-CVAF-VA	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	MEHG-D-GCAF-VA, MEHG-T-GCAF	CN-TL, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	AQF46	26-06-22	1345	W	13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	AQM88	27-06-22	0833																			
	AQM88C		1042																			
	AQF43		1457																			
	AQF44		1519																			
	QC-01		-																			
	Trip Blank	-	-																			

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: B. Dyrod	Date: 28-06-22	Time: 1500	Received by: A.S 14.5°C	Date: 30-06-22	Time: 12:02	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Chain of Custody

L2719501-COFC

COC Number: 22 -

Page 1 of 2

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Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Report Format / Distribution	
Select Report Format:	☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Karen.Mathers@Stantec.com
Email 2	Brad.Horne@Stantec.com
Email 3	Jeremy.Jackson@stantec.com

Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	

Turnaround Time (TAT) Requested
☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information	
ALS Account # / Quote #:	Q88846
Job #:	ALAMOS
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: J. Dalmaijer

Sampler: BS

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	HG-D-U-CVAF-VA	HG-T-U-CVAF-VA	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	MEHG-D-GCAF-VA, MEHG-T-GCAF	CN-TL, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	AQM71	25-06-22	1153	W	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	AQM73		1226																			
	AQM78		1303																			
	AQM74		1330																			
	AQF75		1111																			
	AQF70		1133																			
	Field Blank		1420																			
	AQF42	26-06-22	0845																			
	AQF40		0924																			
	AQF38		1223																			
	AQF41		1422																			
	AQF45		1606		1																	

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	all dissolved samples field filtered
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			

SHIPMENT RELEASE (client use)		
Released by: R. Lynard	Date: 28-06-22	Time: 1000

INITIAL SHIPMENT RECEPTION (ALS use only)		
Received by: AS 14.5°C	Date: 30-06-22	Time: 12:02

FINAL SHIPMENT RECEPTION (ALS use only)		
Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Alamos Gold Inc.
ATTN: KAREN MATHERS
C/O Stantec Consulting
500 - 311 Portage Avenue
Winnipeg MB R3B 2B9

Date Received: 29-JUL-22
Report Date: 09-SEP-22 14:19 (MT)
Version: FINAL

Client Phone: 204-924-5735

Certificate of Analysis

Lab Work Order #: L2725589

Project P.O. #: NOT SUBMITTED
Job Reference: ALAMOS
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2725589-1	L2725589-2	L2725589-3	L2725589-4	L2725589-5
Description	W	W	W	W	W
Sampled Date	24-JUL-22	24-JUL-22	24-JUL-22	24-JUL-22	24-JUL-22
Sampled Time	09:29	10:22	10:59	11:32	11:59
Client ID	AQM28	AQM29C	AQM71	AQM72	AQM73
Grouping / **Analyte**					
WATER					
Physical Tests Hardness (as CaCO3) (mg/L)	21.4	9.71	52.9	23.1	18.5
Total Suspended Solids (mg/L)	1.8	2.8	<1.0	12.8	1.4
Anions and Nutrients Alkalinity, Total (as CaCO3) (mg/L)	8.9	7.0	41.2	14.2	10.6
Ammonia, Total (as N) (mg/L)	0.014	<0.010	0.016	0.059	0.032
Bicarbonate (HCO3) (mg/L)	10.9	8.5	50.3	17.3	12.9
Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
Chloride (Cl) (mg/L)	0.69	0.32	0.47	<0.10	<0.10
Fluoride (F) (mg/L)	0.054	0.054	0.045	0.046	0.054
Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
Nitrate and Nitrite as N (mg/L)	<0.0051	<0.0051	0.0181	<0.0051	<0.0051
Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0181	<0.0050	<0.0050
Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen (mg/L)	0.32	<0.20	0.29	0.82	0.35
Phosphorus (P)-Total (mg/L)	0.0176	0.0202	0.0144	0.0506	0.0333
Sulfate (SO4) (mg/L)	8.89	1.47	7.69	<0.30	<0.30
Cyanides Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Total (mg/L)	0.0024	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	11.5	8.24	17.2	27.4	24.7
Total Organic Carbon (mg/L)	10.7	7.83	16.8	30.1	24.6
Inorganic Parameters Acidity (as CaCO3) (mg/L)	2.2 PEHT	<2.0	3.2 HTD	12.4	9.1
Total Metals Aluminum (Al)-Total (mg/L)	0.193	0.0469	0.0484	0.191	0.103
Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total (mg/L)	0.00027	0.00015	0.00031	0.00075	0.00053
Barium (Ba)-Total (mg/L)	0.00764	0.00595	0.0101	0.0156	0.00603
Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Total (mg/L)	0.0000223	0.0000056	<0.0000050	0.0000115	0.0000051
Calcium (Ca)-Total (mg/L)	6.16	2.83	17.9	7.00	4.82
Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Total (mg/L)	0.00033	0.00014	0.00018	0.00051	0.00024
Cobalt (Co)-Total (mg/L)	0.00082	0.00014	0.00011	0.00141	0.00029
Copper (Cu)-Total (mg/L)	0.00588	0.00097	<0.00050	<0.00050	<0.00050
Iron (Fe)-Total (mg/L)	0.845	0.301	0.326	7.72	0.810

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2725589-6	L2725589-7	L2725589-8	L2725589-9	L2725589-10
Description	W	W	W	W	W
Sampled Date	24-JUL-22	24-JUL-22	25-JUL-22	25-JUL-22	25-JUL-22
Sampled Time	12:34	09:29	10:30	11:50	11:55
Client ID	AQM74	QC-01	AQF7S	AQF7D	AQF38
Grouping / **Analyte**					
WATER					
Physical Tests Hardness (as CaCO3) (mg/L)	16.0	18.0	16.3	16.3	22.0
Total Suspended Solids (mg/L)	4.7	2.1	<1.0	4.6	2.0
Anions and Nutrients Alkalinity, Total (as CaCO3) (mg/L)	13.3	13.4	14.3	13.8	21.6
Ammonia, Total (as N) (mg/L)	0.024	0.028	0.055	0.041	0.010
Bicarbonate (HCO3) (mg/L)	16.2	16.3	17.4	16.8	26.4
Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
Chloride (Cl) (mg/L)	0.19	<0.10	0.10	0.14	0.23
Fluoride (F) (mg/L)	0.046	0.051	0.043	0.039	0.080
Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
Nitrate and Nitrite as N (mg/L)	0.0136	<0.0051	<0.0051	0.0263	<0.0051
Nitrate (as N) (mg/L)	0.0136	<0.0050	<0.0050	0.0263	<0.0050
Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen (mg/L)	0.25	0.50	<0.20	0.40	0.25
Phosphorus (P)-Total (mg/L)	0.0331	0.0425	0.0089	0.0329	0.0187
Sulfate (SO4) (mg/L)	0.47	<0.30 DLM	0.64	1.02	<0.30
Cyanides Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0050 DLM	<0.0010	<0.0010	<0.0010
Cyanide, Total (mg/L)	<0.0010	0.0012	<0.0010	<0.0010	<0.0010
Cyanide, Free (mg/L)	<0.0010	<0.0050 DLM	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	13.1	25.4 RRV	9.09	7.85	11.5
Total Organic Carbon (mg/L)	12.1	25.4	20.5	8.36	11.0
Inorganic Parameters Acidity (as CaCO3) (mg/L)	4.7	9.3	<2.0 HTD	4.3 HTD	<2.0 HTD
Total Metals Aluminum (Al)-Total (mg/L)	0.0749	0.103	0.0251	0.0560	0.0526
Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total (mg/L)	0.00025	0.00054	0.00020	0.00020	0.00022
Barium (Ba)-Total (mg/L)	0.00650	0.00596	0.00621	0.00919	0.00896
Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Total (mg/L)	<0.0000050	0.0000062	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total (mg/L)	4.79	5.70	3.93	4.25	4.12
Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Total (mg/L)	0.00018	0.00028	0.00013	0.00010	0.00013
Cobalt (Co)-Total (mg/L)	0.00011	0.00030	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total (mg/L)	0.00055	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Total (mg/L)	0.362	0.847	0.049	0.209	0.205

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2725589-11 W 25-JUL-22 14:11 AQF43	L2725589-12 W 26-JUL-22 12:43 AQF44	L2725589-13 W 26-JUL-22 13:20 AQF42	L2725589-14 W 26-JUL-22 13:49 AQF40	L2725589-15 W 27-JUL-22 12:45 AQF45
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	9.76	9.69	9.47	9.54	10.2
	Total Suspended Solids (mg/L)	1.4	1.6	1.3	2.5	2.2
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	8.1	8.3	9.7	7.6	8.9
	Ammonia, Total (as N) (mg/L)	0.030	0.015	0.022	0.017	0.018
	Bicarbonate (HCO3) (mg/L)	9.9	10.1	11.8	9.3	10.9
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	0.17	0.16	0.31	0.18	0.39
	Fluoride (F) (mg/L)	0.061	0.062	0.060	0.061	0.062
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.20	<0.20	<0.20	0.24	<0.20
	Phosphorus (P)-Total (mg/L)	0.0151	0.0161	0.0183	0.0163	0.0175
	Sulfate (SO4) (mg/L)	0.44	0.44	0.49	0.44	0.59
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	10.0	9.32	9.05	9.35	9.60
	Total Organic Carbon (mg/L)	9.20	9.15	9.16	9.41	9.13
Inorganic Parameters	Acidity (as CaCO3) (mg/L)	<2.0 HTD	<2.0	<2.0	<2.0	<2.0
Total Metals	Aluminum (Al)-Total (mg/L)	0.0579	0.0642	0.0483	0.0442	0.0731
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00019	0.00016	0.00017	0.00016	0.00018
	Barium (Ba)-Total (mg/L)	0.00571	0.00586	0.00574	0.00626	0.00609
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	0.0000068	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	2.68	2.72	2.56	2.71	2.84
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00015	0.00016	0.00127	0.00014	0.00019
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	0.00062	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.250	0.265	0.247	0.235	0.266

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2725589-16 W 27-JUL-22 13:07 AQF46	L2725589-17 W 25-JUL-22 11:55 AQF41	L2725589-18 W 25-JUL-22 11:55 FIELD BLANK	L2725589-19 W 25-JUL-22 11:55 TRIP BLANK	
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	26.0	9.40	<0.20	<0.20	
	Total Suspended Solids (mg/L)	2.3	1.7	<1.0	<1.0	
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	25.6	8.2	<1.0	<1.0	
	Ammonia, Total (as N) (mg/L)	0.030	0.037	0.024	0.012	
	Bicarbonate (HCO3) (mg/L)	31.2	10.0	<1.2	<1.2	
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	
	Chloride (Cl) (mg/L)	<0.10	0.18	<0.10	<0.10	
	Fluoride (F) (mg/L)	0.043	0.061	<0.020	<0.020	
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	
	Nitrate and Nitrite as N (mg/L)	<0.0051	<0.0051	<0.0051	<0.0051	
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.22	<0.20	<0.20	<0.20	
	Phosphorus (P)-Total (mg/L)	0.0156	0.0133	<0.0010	<0.0010	
	Sulfate (SO4) (mg/L)	0.39	0.44	<0.30	<0.30	
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010 PEHT	<0.0010	
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010 PEHT	<0.0010	
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010 PEHT	<0.0010	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	12.0	8.91	1.25	<0.50	
	Total Organic Carbon (mg/L)	12.3	9.29	1.17	<0.50	
Inorganic Parameters	Acidity (as CaCO3) (mg/L)	2.8	<2.0 HTD	<2.0 HTD	<2.0 HTD	
Total Metals	Aluminum (Al)-Total (mg/L)	0.0293	0.0424	<0.0030	<0.0030	
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Total (mg/L)	0.00028	0.00016	<0.00010	<0.00010	
	Barium (Ba)-Total (mg/L)	0.00715	0.00552	<0.00010	<0.00010	
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Calcium (Ca)-Total (mg/L)	7.86	2.69	<0.050	<0.050	
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Chromium (Cr)-Total (mg/L)	<0.00010	0.00015	0.00013	<0.00010	
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Iron (Fe)-Total (mg/L)	0.079	0.227	<0.010	<0.010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2725589-1	L2725589-2	L2725589-3	L2725589-4	L2725589-5
Description	W	W	W	W	W
Sampled Date	24-JUL-22	24-JUL-22	24-JUL-22	24-JUL-22	24-JUL-22
Sampled Time	09:29	10:22	10:59	11:32	11:59
Client ID	AQM28	AQM29C	AQM71	AQM72	AQM73
Grouping / **Analyte**					
WATER					
Total Metals Lead (Pb)-Total (mg/L)	0.000088	<0.000050	<0.000050	0.000085	<0.000050
Lithium (Li)-Total (mg/L)	0.0012	0.0011	0.0011	<0.0010	0.0012
Magnesium (Mg)-Total (mg/L)	1.40	0.741	1.88	1.45	1.12
Manganese (Mn)-Total (mg/L)	0.0431	0.0255	0.0301	0.309	0.0566
Mercury (Hg)-Total (ug/L)	0.00176	0.00131	0.00235	0.00294	0.00179
Molybdenum (Mo)-Total (mg/L)	0.000072	<0.000050	<0.000050	0.000085	<0.000050
Nickel (Ni)-Total (mg/L)	0.0707	0.00681	0.00057	0.00132	0.00062
Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	0.046	<0.030
Potassium (K)-Total (mg/L)	0.735	0.521	0.425	0.202	0.067
Rubidium (Rb)-Total (mg/L)	0.00113	0.00110	0.00072	0.00057	<0.00020
Selenium (Se)-Total (mg/L)	0.000059	0.000059	<0.000050	0.000105	<0.000050
Silicon (Si)-Total (mg/L)	2.48	2.36	3.07	3.44	3.79
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	1.30	0.979	1.43	0.693	1.13
Strontium (Sr)-Total (mg/L)	0.0179	0.0120	0.0290	0.0233	0.0114
Sulfur (S)-Total (mg/L)	3.41	0.74	3.24	<0.50	<0.50
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00031	<0.00010
Titanium (Ti)-Total (mg/L)	0.00175	0.00128	0.00163	0.00576	0.00126
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	0.000027	0.000028	0.000018	0.000023	<0.000010
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	0.00127	<0.00050
Zinc (Zn)-Total (mg/L)	0.0151	<0.0030	<0.0030	0.0094	<0.0030
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	0.00029	<0.00020
Dissolved Metals Dissolved MeHg Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.131	0.0261	0.0362	0.147	0.0929
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00022	0.00015	0.00034	0.00062	0.00052
Barium (Ba)-Dissolved (mg/L)	0.00756	0.00569	0.0105	0.0363 RRV	0.00575
Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved (mg/L)	0.0000179	<0.0000050	<0.0000050	0.0000097	<0.0000050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2725589-6	L2725589-7	L2725589-8	L2725589-9	L2725589-10
Description	W	W	W	W	W
Sampled Date	24-JUL-22	24-JUL-22	25-JUL-22	25-JUL-22	25-JUL-22
Sampled Time	12:34	09:29	10:30	11:50	11:55
Client ID	AQM74	QC-01	AQF7S	AQF7D	AQF38
Grouping / **Analyte**					
WATER					
Total Metals Lead (Pb)-Total (mg/L)	<0.000050	0.000059	<0.000050	0.000118	0.000115
Lithium (Li)-Total (mg/L)	<0.0010	0.0014	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total (mg/L)	1.07	1.15	1.49	1.49	1.46
Manganese (Mn)-Total (mg/L)	0.0398	0.0578	0.00800	0.0625	0.0622
Mercury (Hg)-Total (ug/L)	0.00166	0.00121	0.00102	0.00149	0.00099
Molybdenum (Mo)-Total (mg/L)	0.000274	<0.000050	0.000084	0.000050	<0.000050
Nickel (Ni)-Total (mg/L)	<0.00050	0.00065	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Total (mg/L)	0.039	0.051	<0.030	<0.030	<0.030
Potassium (K)-Total (mg/L)	0.437	0.080	0.520	0.515	0.517
Rubidium (Rb)-Total (mg/L)	0.00069	<0.00020	0.00092	0.00098	0.00089
Selenium (Se)-Total (mg/L)	0.000053	<0.000050	<0.000050	0.000052	0.000071
Silicon (Si)-Total (mg/L)	1.14	3.89	0.84	1.20	1.13
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	0.907	1.17	1.00	0.986	0.996
Strontium (Sr)-Total (mg/L)	0.0124	0.0132	0.0116	0.0127	0.0121
Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00145	0.00141
Titanium (Ti)-Total (mg/L)	0.00149	0.00145	0.00036	0.00120	0.00107
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	0.000018	<0.000010	<0.000010	0.000011	0.000012
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals Dissolved MeHg Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.0452	0.0913	0.0194	0.0244	0.0103
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00022	0.00051	0.00018	0.00017	0.00016
Barium (Ba)-Dissolved (mg/L)	0.00612	0.00548	0.00663	0.00900	0.00884
Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000060	<0.0000050	<0.0000050	<0.0000050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L2725589-11	L2725589-12	L2725589-13	L2725589-14	L2725589-15
	Description:	W	W	W	W	W
	Sampled Date:	25-JUL-22	26-JUL-22	26-JUL-22	26-JUL-22	27-JUL-22
	Sampled Time:	14:11	12:43	13:20	13:49	12:45
	Client ID:	AQF43	AQF44	AQF42	AQF40	AQF45
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0010
	Magnesium (Mg)-Total (mg/L)	0.837	0.833	0.793	0.792	0.871
	Manganese (Mn)-Total (mg/L)	0.0221	0.0230	0.0178	0.0185	0.0266
	Mercury (Hg)-Total (ug/L)	0.00136	0.00128	0.00184	0.00132	0.00156
	Molybdenum (Mo)-Total (mg/L)	0.000076	0.000074	0.000082	0.000083	0.000074
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Total (mg/L)	0.505	0.498	0.489	0.486	0.487
	Rubidium (Rb)-Total (mg/L)	0.00108	0.00112	0.00106	0.00102	0.00103
	Selenium (Se)-Total (mg/L)	0.000057	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	2.16	2.22	2.10	2.13	2.10
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	1.02	0.995	1.02	0.974	0.991
	Strontium (Sr)-Total (mg/L)	0.0113	0.0121	0.0113	0.0119	0.0119
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	0.00041	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00141	0.00178	0.00124	0.00112	0.00276
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	0.000022	0.000026	0.000022	0.000023	0.000030
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	0.0060	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals	Dissolved MeHg Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0292	0.0294	0.0255	0.0264	0.0337
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00016	0.00015	0.00014	0.00017	0.00014
	Barium (Ba)-Dissolved (mg/L)	0.00533	0.00537	0.00541	0.00538	0.00528
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2725589-16	L2725589-17	L2725589-18	L2725589-19	
Description	W	W	W	W	
Sampled Date	27-JUL-22	25-JUL-22	25-JUL-22	25-JUL-22	
Sampled Time	13:07	11:55	11:55	11:55	
Client ID	AQF46	AQF41	FIELD BLANK	TRIP BLANK	
Grouping / **Analyte**					
WATER					
Total Metals Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
Magnesium (Mg)-Total (mg/L)	1.77	0.799	<0.0050	<0.0050	
Manganese (Mn)-Total (mg/L)	0.0181	0.0142	<0.00010	<0.00010	
Mercury (Hg)-Total (ug/L)	0.00128	0.00152	0.00126	<0.00050	
Molybdenum (Mo)-Total (mg/L)	0.000071	0.000061	<0.000050	<0.000050	
Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	
Potassium (K)-Total (mg/L)	0.497	0.484	<0.050	<0.050	
Rubidium (Rb)-Total (mg/L)	0.00074	0.00094	<0.00020	<0.00020	
Selenium (Se)-Total (mg/L)	0.000050	<0.000050	<0.000050	<0.000050	
Silicon (Si)-Total (mg/L)	0.64	2.09	<0.10	<0.10	
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium (Na)-Total (mg/L)	0.917	0.991	<0.050	<0.050	
Strontium (Sr)-Total (mg/L)	0.0142	0.0118	<0.00020	<0.00020	
Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	<0.50	
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Tin (Sn)-Total (mg/L)	<0.00010	0.00014	0.00015	<0.00010	
Titanium (Ti)-Total (mg/L)	0.00035	0.00086	<0.00030	<0.00030	
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Uranium (U)-Total (mg/L)	<0.000010	0.000024	<0.000010	<0.000010	
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Dissolved Metals Dissolved MeHg Filtration Location	FIELD	FIELD	FIELD	FIELD	
Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
Aluminum (Al)-Dissolved (mg/L)	0.0255	0.0261	<0.0010	<0.0010	
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Arsenic (As)-Dissolved (mg/L)	0.00028	0.00015	<0.00010	<0.00010	
Barium (Ba)-Dissolved (mg/L)	0.00719	0.00525	0.00099 RRV	<0.00010	
Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2725589-1	L2725589-2	L2725589-3	L2725589-4	L2725589-5
Description	W	W	W	W	W
Sampled Date	24-JUL-22	24-JUL-22	24-JUL-22	24-JUL-22	24-JUL-22
Sampled Time	09:29	10:22	10:59	11:32	11:59
Client ID	AQM28	AQM29C	AQM71	AQM72	AQM73
Grouping / **Analyte**					
WATER					
Dissolved Metals Calcium (Ca)-Dissolved (mg/L)	6.30	2.68	17.8	6.98	5.63
Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved (mg/L)	0.00019	<0.00010	0.00014	0.00043	0.00025
Cobalt (Co)-Dissolved (mg/L)	0.00040	<0.00010	<0.00010	0.00124	0.00028
Copper (Cu)-Dissolved (mg/L)	0.00468	0.00082	0.00022	0.00135	<0.00020
Iron (Fe)-Dissolved (mg/L)	0.569	0.163	0.268	4.23	0.733
Lead (Pb)-Dissolved (mg/L)	0.000058	<0.000050	<0.000050	0.000089	<0.000050
Lithium (Li)-Dissolved (mg/L)	0.0015	0.0011	0.0012	<0.0010	0.0015
Magnesium (Mg)-Dissolved (mg/L)	1.39	0.734	2.02	1.37	1.08
Manganese (Mn)-Dissolved (mg/L)	0.0262	0.00752	0.0284	0.291	0.0559
Mercury (Hg)-Dissolved (ug/L)	0.00175	0.00105	0.00201	0.00221	0.00176
Molybdenum (Mo)-Dissolved (mg/L)	0.000065	<0.000050	<0.000050	0.000073	<0.000050
Nickel (Ni)-Dissolved (mg/L)	0.0666	0.00621	0.00054	0.00159	0.00068
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
Potassium (K)-Dissolved (mg/L)	0.749	0.535	0.450	0.201	0.075
Rubidium (Rb)-Dissolved (mg/L)	0.00109	0.00104	0.00069	0.00051	<0.00020
Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	0.000051	<0.000050
Silicon (Si)-Dissolved (mg/L)	2.55	2.39	3.21	3.64	3.88
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	1.44	1.09	1.51	0.717	1.19
Strontium (Sr)-Dissolved (mg/L)	0.0187	0.0121	0.0299	0.0243	0.0134
Sulfur (S)-Dissolved (mg/L)	4.14	0.88	4.12	<0.50	0.69
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00027	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	0.00070	<0.00030	0.00089	0.00401	0.00096
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved (mg/L)	0.000026	0.000022	0.000014	0.000018	<0.000010
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00079	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.0118	0.0031	0.0015	0.0058	0.0034
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	0.00032	0.00020
Speciated Metals Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50
Methylmercury (as MeHg)-Dissolved (ug/L)	0.000055	0.000091	0.000454	0.000138	0.000158
Methylmercury (as MeHg)-Total (ug/L)	0.000034	0.000042	0.000689	0.000199	0.000162

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2725589-6 W 24-JUL-22 12:34 AQM74	L2725589-7 W 24-JUL-22 09:29 QC-01	L2725589-8 W 25-JUL-22 10:30 AQF7S	L2725589-9 W 25-JUL-22 11:50 AQF7D	L2725589-10 W 25-JUL-22 11:55 AQF38
WATER						
Dissolved Metals	Calcium (Ca)-Dissolved (mg/L)	4.68	5.56	4.13	4.18	6.36 RRV
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Dissolved (mg/L)	0.00019	0.00022	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00024	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00049	0.00020	0.00022	0.00022	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.197	0.698	0.031	0.093	0.031
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0010	0.0013	<0.0010	<0.0010	0.0010
	Magnesium (Mg)-Dissolved (mg/L)	1.05	1.01	1.45	1.43	1.49
	Manganese (Mn)-Dissolved (mg/L)	0.0215	0.0527	0.00055	0.0467	0.00251
	Mercury (Hg)-Dissolved (ug/L)	0.00153	0.00110	0.00127	0.00103	0.00148
	Molybdenum (Mo)-Dissolved (mg/L)	0.000240	<0.000050	0.000076	0.000060	0.00180 RRV
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00060	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.446	0.070	0.546	0.530	0.593
	Rubidium (Rb)-Dissolved (mg/L)	0.00072	<0.00020	0.00099	0.00096	0.00087
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	1.07	3.75	0.898	1.15	0.840
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.967	1.00	1.07	1.04	1.12
	Strontium (Sr)-Dissolved (mg/L)	0.0124	0.0122	0.0127	0.0126	0.0160
	Sulfur (S)-Dissolved (mg/L)	0.52	<0.50	<0.50	1.08	<0.50
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00096	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00061	0.00080	<0.00030	<0.00030	<0.00030
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.000016	<0.000010	<0.000010	<0.000010	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0036	0.0023	0.0011	0.0023	0.0040
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals	Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Methylmercury (as MeHg)-Dissolved (ug/L)	0.000214	0.000188	0.000139	0.000076	0.000087
	Methylmercury (as MeHg)-Total (ug/L)	0.000303	0.000169	0.000030	0.000059	<0.000020

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2725589-11	L2725589-12	L2725589-13	L2725589-14	L2725589-15
Description	W	W	W	W	W
Sampled Date	25-JUL-22	26-JUL-22	26-JUL-22	26-JUL-22	27-JUL-22
Sampled Time	14:11	12:43	13:20	13:49	12:45
Client ID	AQF43	AQF44	AQF42	AQF40	AQF45
Grouping / **Analyte**					
WATER					
Dissolved Metals Calcium (Ca)-Dissolved (mg/L)	2.61	2.66	2.59	2.62	2.80
Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved (mg/L)	0.00011	0.00011	0.00010	0.00011	0.00013
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	0.00023	0.00030	0.00021	0.00022	0.00035
Iron (Fe)-Dissolved (mg/L)	0.163	0.158	0.153	0.152	0.156
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved (mg/L)	0.786	0.741	0.730	0.730	0.784
Manganese (Mn)-Dissolved (mg/L)	0.00425	0.00457	0.00461	0.00558	0.00399
Mercury (Hg)-Dissolved (ug/L)	0.00150	0.00159	0.00146	0.00118	0.00173
Molybdenum (Mo)-Dissolved (mg/L)	0.000059	0.000092	0.000084	0.000084	0.000089
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
Potassium (K)-Dissolved (mg/L)	0.507	0.503	0.487	0.490	0.480
Rubidium (Rb)-Dissolved (mg/L)	0.00102	0.00101	0.00095	0.00100	0.00104
Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si)-Dissolved (mg/L)	2.18	1.99	1.95	1.97	2.06
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	1.06	0.870	0.888	0.908	0.894
Strontium (Sr)-Dissolved (mg/L)	0.0122	0.0111	0.0112	0.0111	0.0113
Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	0.56	0.56	<0.50
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00069	0.00016	<0.00010
Titanium (Ti)-Dissolved (mg/L)	0.00045	0.00049	0.00044	0.00047	0.00065
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved (mg/L)	0.000021	0.000024	0.000025	0.000023	0.000025
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.0013	<0.0010	0.0090	0.0021	0.0021
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50
Methylmercury (as MeHg)-Dissolved (ug/L)	0.000148	0.000073	0.000102	0.000159	0.000170
Methylmercury (as MeHg)-Total (ug/L)	0.000050	0.000090	0.000055	0.000033	0.000052

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2725589-16	L2725589-17	L2725589-18	L2725589-19	
Description	W	W	W	W	
Sampled Date	27-JUL-22	25-JUL-22	25-JUL-22	25-JUL-22	
Sampled Time	13:07	11:55	11:55	11:55	
Client ID	AQF46	AQF41	FIELD BLANK	TRIP BLANK	
Grouping / **Analyte**					
WATER					
Dissolved Metals Calcium (Ca)-Dissolved (mg/L)	7.75	2.59	<0.050	<0.050	
Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00012	<0.00010	<0.00010	
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Copper (Cu)-Dissolved (mg/L)	0.00032	0.00021	<0.00020	<0.00020	
Iron (Fe)-Dissolved (mg/L)	0.052	0.147	<0.010	<0.010	
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
Magnesium (Mg)-Dissolved (mg/L)	1.61	0.712	<0.0050	<0.0050	
Manganese (Mn)-Dissolved (mg/L)	0.0117	0.00399	<0.00010	<0.00010	
Mercury (Hg)-Dissolved (ug/L)	0.00077	0.00093	<0.00050	<0.00050	
Molybdenum (Mo)-Dissolved (mg/L)	0.000073	0.000076	<0.000050	<0.000050	
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	
Potassium (K)-Dissolved (mg/L)	0.492	0.472	<0.050	<0.050	
Rubidium (Rb)-Dissolved (mg/L)	0.00084	0.00092	<0.00020	<0.00020	
Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
Silicon (Si)-Dissolved (mg/L)	0.568	2.06	<0.050	<0.050	
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium (Na)-Dissolved (mg/L)	0.830	0.873	<0.050	<0.050	
Strontium (Sr)-Dissolved (mg/L)	0.0135	0.0111	<0.00010	<0.00010	
Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	<0.50	
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Tin (Sn)-Dissolved (mg/L)	0.00024	<0.00010	<0.00010	<0.00010	
Titanium (Ti)-Dissolved (mg/L)	<0.00030	0.00036	<0.00030	<0.00030	
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Uranium (U)-Dissolved (mg/L)	<0.000010	0.000021	<0.000010	<0.000010	
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Zinc (Zn)-Dissolved (mg/L)	0.0048	0.0032	<0.0010	<0.0010	
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Speciated Metals Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	0.61	
Methylmercury (as MeHg)-Dissolved (ug/L)	0.000088	0.000145	0.000052 RRV	<0.000020	
Methylmercury (as MeHg)-Total (ug/L)	0.000099	0.000034	<0.000020	<0.000020	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	B	L2725589-13, -6
Method Blank	Alkalinity, Total (as CaCO3)	B	L2725589-13, -6
Method Blank	Cyanide, Total	B	L2725589-1, -10, -11, -12, -13, -19, -2, -3, -5, -6, -8, -9
Laboratory Control Sample	Sulfur (S)-Dissolved	MES	L2725589-1, -10, -11, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2725589-1, -10, -11, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L2725589-1, -10, -11, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2725589-1, -10, -11, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2725589-12, -13, -14, -15, -16, -17, -18, -19, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2725589-1, -10, -11, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2725589-12, -13, -14, -15, -16, -17, -18, -19, -7
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2725589-12, -13, -14, -15, -16, -17, -18, -19, -7
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2725589-1, -10, -11, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2725589-1, -10, -11, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2725589-1, -10, -11, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2725589-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2725589-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Total	MS-B	L2725589-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Nickel (Ni)-Total	MS-B	L2725589-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-WT	Water	Acidity (as CaCO3)	APHA 2310 B - Potentiometric Titration
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BR-IC-N-WP	Water	Bromide in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

C-DOC-HTC-WP Water Dissolved Organic Carbon by Combustion APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

C-TOC-HTC-WP Water Total Organic Carbon by Combustion APHA 5310 B-WP

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP Water Chloride in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-L-CFA-VA Water Low Level Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-FREE-L-CFA-WT Water Low Level Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-VA Water Low Level Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-T-L-CFA-WT Water Low Level Total Cyanide in water by CFA ISO 14403-2:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, however it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-VA Water Low level WAD Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

CN-WAD-L-CFA-WT Water Low level WAD Cyanide in water by CFA APHA 4500CN I-Weak acid Dist Colorimet

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

CR-CR6-PWQO-IC-WT Water Chromium +6 EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-SCREEN-WP Water Conductivity Screen (Internal Use Only) APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

EC-SCREEN-WT Water Conductivity Screen (Internal Use Only) APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-WP Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

Reference Information

HG-D-U-CVAF-VA	Water	Diss. Mercury in Water by CVAFS (Ultra)	APHA 3030 B / EPA 1631 REV. E

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

MEHG-D-GCAF-VA	Water	Diss. Methylmercury in Water by GCAFS	EPA 1630 (mod)

This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".

MEHG-T-GCAF-VA	Water	Total Methylmercury in Water by GCAFS	EPA 1630 (mod)

This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".

MET-D-CCMS-WP	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-TOTKJ-WP	Water	Total Kjeldahl Nitrogen	APHA 4500 NorgD (modified)

Aqueous samples are digested in a block digester with sulfuric acid and copper sulfate as a catalyst. Total Kjeldahl Nitrogen is then analyzed using a discrete analyzer with colorimetric detection.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-L-IC-N-WP	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

P-T-L-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-LR-WP	Water	Total Suspended Solids	APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 Œ 105°C.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Reference Information

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Alamos Gold Inc.
C/O Stantec Consulting 500 - 311 Portage Avenue
Winnipeg MB R3B 2B9
Contact: KAREN MATHERS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-WT	**Water**							
Batch R5837022								
WG3754894-27 DUP		**L2725589-1**						
Acidity (as CaCO3)		2.2	2.3		mg/L	3.6	20	06-AUG-22
WG3754894-26 LCS								
Acidity (as CaCO3)			105.4		%		85-115	06-AUG-22
WG3754894-25 MB								
Acidity (as CaCO3)			<2.0		mg/L		3	06-AUG-22
Batch R5838418								
WG3755205-2 LCS								
Acidity (as CaCO3)			107.3		%		85-115	06-AUG-22
WG3755205-1 MB								
Acidity (as CaCO3)			<2.0		mg/L		3	06-AUG-22
Batch R5839338								
WG3755208-2 LCS								
Acidity (as CaCO3)			110.3		%		85-115	09-AUG-22
WG3755208-1 MB								
Acidity (as CaCO3)			<2.0		mg/L		3	09-AUG-22
ALK-TITR-WP	**Water**							
Batch R5836215								
WG3754842-15 DUP		**L2725589-1**						
Alkalinity, Total (as CaCO3)		8.9	8.9		mg/L	0.0	20	04-AUG-22
WG3754842-14 LCS								
Alkalinity, Total (as CaCO3)			100.7		%		85-115	04-AUG-22
WG3754842-4 LCS								
Alkalinity, Total (as CaCO3)			100.5		%		85-115	04-AUG-22
WG3754842-1 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-AUG-22
WG3754842-11 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-AUG-22
Batch R5836323								
WG3754849-14 LCS								
Alkalinity, Total (as CaCO3)			97.9		%		85-115	04-AUG-22
WG3754849-9 LCS								
Alkalinity, Total (as CaCO3)			99.9		%		85-115	04-AUG-22
WG3754849-11 MB								
Alkalinity, Total (as CaCO3)			1.2	B	mg/L		1	04-AUG-22
WG3754849-6 MB								
Alkalinity, Total (as CaCO3)			1.3	B	mg/L		1	04-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5837196								
WG3755292-4 LCS								
Alkalinity, Total (as CaCO3)			102.0		%		85-115	08-AUG-22
WG3755292-1 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-AUG-22
BR-IC-N-WP	**Water**							
Batch R5834777								
WG3753652-2 LCS								
Bromide (Br)			101.8		%		85-115	30-JUL-22
WG3753652-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	30-JUL-22
Batch R5836061								
WG3754607-2 LCS								
Bromide (Br)			102.0		%		85-115	04-AUG-22
WG3754607-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	04-AUG-22
Batch R5836260								
WG3754238-2 LCS								
Bromide (Br)			101.3		%		85-115	03-AUG-22
WG3754238-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	03-AUG-22
C-DOC-HTC-WP	**Water**							
Batch R5847731								
WG3758835-2 LCS								
Dissolved Organic Carbon			99.5		%		80-120	22-AUG-22
WG3758835-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-AUG-22
Batch R5849040								
WG3759897-3 DUP		**L2725589-18**						
Dissolved Organic Carbon		1.25	1.14		mg/L	9.2	20	26-AUG-22
WG3759897-2 LCS								
Dissolved Organic Carbon			102.2		%		80-120	26-AUG-22
WG3759897-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-AUG-22
WG3759897-4 MS		**L2725589-19**						
Dissolved Organic Carbon			94.6		%		70-130	26-AUG-22
C-TOC-HTC-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	**Water**							
Batch R5847730								
WG3758844-2 LCS								
Total Organic Carbon			106.8		%		80-120	22-AUG-22
WG3758844-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	22-AUG-22
Batch R5849039								
WG3759906-3 DUP		**L2725589-10**						
Total Organic Carbon		11.0	10.9		mg/L	0.4	20	26-AUG-22
WG3759906-2 LCS								
Total Organic Carbon			102.3		%		80-120	26-AUG-22
WG3759906-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	26-AUG-22
WG3759906-4 MS		**L2725589-11**						
Total Organic Carbon			92.7		%		70-130	26-AUG-22
CL-L-IC-N-WP	**Water**							
Batch R5834777								
WG3753652-2 LCS								
Chloride (Cl)			98.2		%		90-110	30-JUL-22
WG3753652-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	30-JUL-22
Batch R5836061								
WG3754607-2 LCS								
Chloride (Cl)			98.0		%		90-110	04-AUG-22
WG3754607-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	04-AUG-22
Batch R5836260								
WG3754238-2 LCS								
Chloride (Cl)			98.3		%		90-110	03-AUG-22
WG3754238-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	03-AUG-22
CN-FREE-L-CFA-VA	**Water**							
Batch R5837090								
WG3755071-3 DUP		**L2725589-12**						
Cyanide, Free		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-AUG-22
WG3755071-2 LCS								
Cyanide, Free			96.9		%		80-120	07-AUG-22
WG3755071-1 MB								
Cyanide, Free			<0.0010		mg/L		0.001	07-AUG-22
WG3755071-4 MS		**L2725589-13**						

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-FREE-L-CFA-VA	**Water**							
Batch R5837090								
WG3755071-4 MS		**L2725589-13**						
Cyanide, Free			98.6		%		75-125	07-AUG-22
Batch R5837117								
WG3755188-3 DUP		**L2725589-15**						
Cyanide, Free		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-AUG-22
WG3755188-2 LCS								
Cyanide, Free			94.9		%		80-120	07-AUG-22
WG3755188-1 MB								
Cyanide, Free			<0.0010		mg/L		0.001	07-AUG-22
WG3755188-4 MS		**L2725589-16**						
Cyanide, Free			100.9		%		75-125	07-AUG-22
Batch R5840756								
WG3755246-2 LCS								
Cyanide, Free			96.8		%		80-120	11-AUG-22
WG3755246-1 MB								
Cyanide, Free			<0.0010		mg/L		0.001	11-AUG-22
WG3755246-4 MS		**L2725589-5**						
Cyanide, Free			103.6		%		75-125	11-AUG-22
Batch R5841656								
WG3756359-3 DUP		**L2725589-7**						
Cyanide, Free		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	12-AUG-22
WG3756359-2 LCS								
Cyanide, Free			92.4		%		80-120	12-AUG-22
WG3756359-1 MB								
Cyanide, Free			<0.0010		mg/L		0.001	12-AUG-22
CN-FREE-L-CFA-WT	**Water**							
Batch R5851137								
WG3760376-3 DUP		**L2725589-18**						
Cyanide, Free		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	31-AUG-22
WG3760376-2 LCS								
Cyanide, Free			97.4		%		80-120	31-AUG-22
WG3760376-1 MB								
Cyanide, Free			<0.0010		mg/L		0.001	31-AUG-22
WG3760376-4 MS		**L2725589-18**						
Cyanide, Free			102.2		%		75-125	31-AUG-22
CN-T-L-CFA-VA	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-T-L-CFA-VA	**Water**							
Batch R5837090								
WG3755071-3 DUP		**L2725589-12**						
Cyanide, Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-AUG-22
WG3755071-2 LCS								
Cyanide, Total			81.6		%		80-120	07-AUG-22
WG3755071-1 MB								
Cyanide, Total			0.0034	B	mg/L		0.001	07-AUG-22
WG3755071-4 MS		**L2725589-13**						
Cyanide, Total			88.5		%		75-125	07-AUG-22
Batch R5837117								
WG3755188-3 DUP		**L2725589-15**						
Cyanide, Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-AUG-22
WG3755188-2 LCS								
Cyanide, Total			84.6		%		80-120	07-AUG-22
WG3755188-1 MB								
Cyanide, Total			<0.0010		mg/L		0.001	07-AUG-22
WG3755188-4 MS		**L2725589-16**						
Cyanide, Total			89.9		%		75-125	07-AUG-22
Batch R5840756								
WG3755246-3 DUP		**L2725589-4**						
Cyanide, Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	11-AUG-22
WG3755246-2 LCS								
Cyanide, Total			88.2		%		80-120	11-AUG-22
WG3755246-1 MB								
Cyanide, Total			<0.0010		mg/L		0.001	11-AUG-22
CN-T-L-CFA-WT	**Water**							
Batch R5851137								
WG3760376-3 DUP		**L2725589-18**						
Cyanide, Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	31-AUG-22
WG3760376-2 LCS								
Cyanide, Total			96.8		%		80-120	31-AUG-22
WG3760376-1 MB								
Cyanide, Total			<0.0010		mg/L		0.001	31-AUG-22
WG3760376-4 MS		**L2725589-18**						
Cyanide, Total			97.1		%		70-130	31-AUG-22
CN-WAD-L-CFA-VA	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-WAD-L-CFA-VA	**Water**							
Batch R5837090								
WG3755071-3 DUP		**L2725589-12**						
Cyanide, Weak Acid Diss		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-AUG-22
WG3755071-2 LCS								
Cyanide, Weak Acid Diss			96.2		%		80-120	07-AUG-22
WG3755071-1 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	07-AUG-22
WG3755071-4 MS		**L2725589-13**						
Cyanide, Weak Acid Diss			98.3		%		75-125	07-AUG-22
Batch R5837117								
WG3755188-3 DUP		**L2725589-15**						
Cyanide, Weak Acid Diss		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-AUG-22
WG3755188-2 LCS								
Cyanide, Weak Acid Diss			95.7		%		80-120	07-AUG-22
WG3755188-1 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	07-AUG-22
WG3755188-4 MS		**L2725589-16**						
Cyanide, Weak Acid Diss			102.9		%		75-125	07-AUG-22
Batch R5841656								
WG3756359-3 DUP		**L2725589-7**						
Cyanide, Weak Acid Diss		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	12-AUG-22
WG3756359-2 LCS								
Cyanide, Weak Acid Diss			91.1		%		80-120	12-AUG-22
WG3756359-1 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	12-AUG-22
CN-WAD-L-CFA-WT	**Water**							
Batch R5851137								
WG3760376-3 DUP		**L2725589-18**						
Cyanide, Weak Acid Diss		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	31-AUG-22
WG3760376-2 LCS								
Cyanide, Weak Acid Diss			105.0		%		80-120	31-AUG-22
WG3760376-1 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	31-AUG-22
WG3760376-4 MS		**L2725589-18**						
Cyanide, Weak Acid Diss			107.5		%		70-130	31-AUG-22
CR-CR6-PWQO-IC-WT	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-PWQO-IC-WT	**Water**							
Batch R5837359								
WG3755336-2 LCS								
Chromium, Hexavalent			100.2		%		80-120	05-AUG-22
WG3755336-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	05-AUG-22
Batch R5838282								
WG3755600-2 LCS								
Chromium, Hexavalent			101.2		%		80-120	08-AUG-22
WG3755600-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	08-AUG-22
Batch R5839459								
WG3755727-2 LCS								
Chromium, Hexavalent			97.6		%		80-120	09-AUG-22
WG3755727-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	09-AUG-22
Batch R5840499								
WG3756262-2 LCS								
Chromium, Hexavalent			98.4		%		80-120	10-AUG-22
WG3756262-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	10-AUG-22
F-IC-N-WP	**Water**							
Batch R5834777								
WG3753652-2 LCS								
Fluoride (F)			101.8		%		90-110	30-JUL-22
WG3753652-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	30-JUL-22
Batch R5836061								
WG3754607-2 LCS								
Fluoride (F)			102.4		%		90-110	04-AUG-22
WG3754607-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	04-AUG-22
Batch R5836260								
WG3754238-2 LCS								
Fluoride (F)			102.0		%		90-110	03-AUG-22
WG3754238-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	03-AUG-22
HG-D-U-CVAF-VA	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-D-U-CVAF-VA	**Water**							
Batch R5851797								
WG3760500-3 DUP		**L2725589-1**						
Mercury (Hg)-Dissolved		0.00175	0.00186		ug/L	6.2	20	31-AUG-22
WG3760500-2 LCS								
Mercury (Hg)-Dissolved			107.8		%		80-120	31-AUG-22
WG3760500-1 MB		**NP**						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	31-AUG-22
WG3760600-1 MB								
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	31-AUG-22
WG3760500-4 MS		**L2725589-2**						
Mercury (Hg)-Dissolved			97.9		%		70-130	31-AUG-22
HG-T-U-CVAF-VA	**Water**							
Batch R5851736								
WG3760490-3 DUP		**L2725589-1**						
Mercury (Hg)-Total		0.00176	0.00167		ug/L	5.5	20	31-AUG-22
WG3760490-2 LCS								
Mercury (Hg)-Total			107.3		%		80-120	31-AUG-22
WG3760490-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	31-AUG-22
WG3760490-4 MS		**L2725589-2**						
Mercury (Hg)-Total			90.3		%		70-130	31-AUG-22
MEHG-D-GCAF-VA	**Water**							
Batch R5843158								
WG3758158-3 LCS								
Methylmercury (as MeHg)-Dissolved			77.2		%		70-130	18-AUG-22
WG3758158-1 MB								
Methylmercury (as MeHg)-Dissolved			<0.000020		ug/L		0.00002	18-AUG-22
WG3758158-4 MS		**L2725589-8**						
Methylmercury (as MeHg)-Dissolved			70.4		%		60-140	18-AUG-22
Batch R5848140								
WG3759010-1 MB								
Methylmercury (as MeHg)-Dissolved			<0.000020		ug/L		0.00002	23-AUG-22
MEHG-T-GCAF-VA	**Water**							
Batch R5843158								
WG3758158-2 DUP		**L2725589-2**						
Methylmercury (as MeHg)-Total		0.000042	0.000044		ug/L	2.8	30	18-AUG-22
WG3758515-2 DUP		**L2725589-10**						
Methylmercury (as MeHg)-Total		<0.000020	0.000029	RPD-NA	ug/L	N/A	30	20-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MEHG-T-GCAF-VA	**Water**							
Batch	**R5843158**							
WG3757531-3	**LCS**							
Methylmercury (as MeHg)-Total			81.4		%		70-130	16-AUG-22
WG3758158-3	**LCS**							
Methylmercury (as MeHg)-Total			77.2		%		70-130	18-AUG-22
WG3758515-3	**LCS**							
Methylmercury (as MeHg)-Total			81.0		%		70-130	20-AUG-22
WG3757531-1	**MB**							
Methylmercury (as MeHg)-Total			<0.000020		ug/L		0.00002	16-AUG-22
WG3758158-1	**MB**							
Methylmercury (as MeHg)-Total			<0.000020		ug/L		0.00002	18-AUG-22
WG3758515-1	**MB**							
Methylmercury (as MeHg)-Total			<0.000020		ug/L		0.00002	20-AUG-22
MET-D-CCMS-WP	**Water**							
Batch	**R5837587**							
WG3754298-2	**LCS**							
Aluminum (Al)-Dissolved			107.9		%		80-120	05-AUG-22
Antimony (Sb)-Dissolved			98.1		%		80-120	05-AUG-22
Arsenic (As)-Dissolved			105.3		%		80-120	05-AUG-22
Barium (Ba)-Dissolved			104.3		%		80-120	05-AUG-22
Beryllium (Be)-Dissolved			115.7		%		80-120	05-AUG-22
Bismuth (Bi)-Dissolved			103.2		%		80-120	05-AUG-22
Boron (B)-Dissolved			119.9		%		80-120	05-AUG-22
Cadmium (Cd)-Dissolved			104.7		%		80-120	05-AUG-22
Calcium (Ca)-Dissolved			110.9		%		80-120	05-AUG-22
Cesium (Cs)-Dissolved			100.3		%		80-120	05-AUG-22
Chromium (Cr)-Dissolved			104.4		%		80-120	05-AUG-22
Cobalt (Co)-Dissolved			105.6		%		80-120	05-AUG-22
Copper (Cu)-Dissolved			102.1		%		80-120	05-AUG-22
Iron (Fe)-Dissolved			103.2		%		80-120	05-AUG-22
Lead (Pb)-Dissolved			99.4		%		80-120	05-AUG-22
Lithium (Li)-Dissolved			117.3		%		80-120	05-AUG-22
Magnesium (Mg)-Dissolved			115.8		%		80-120	05-AUG-22
Manganese (Mn)-Dissolved			105.1		%		80-120	05-AUG-22
Molybdenum (Mo)-Dissolved			103.1		%		80-120	05-AUG-22
Nickel (Ni)-Dissolved			104.5		%		80-120	05-AUG-22
Phosphorus (P)-Dissolved			113.8		%		80-120	05-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5837587								
WG3754298-2 LCS								
Potassium (K)-Dissolved			110.8		%		80-120	05-AUG-22
Rubidium (Rb)-Dissolved			104.5		%		80-120	05-AUG-22
Selenium (Se)-Dissolved			101.1		%		80-120	05-AUG-22
Silicon (Si)-Dissolved			111.1		%		80-120	05-AUG-22
Silver (Ag)-Dissolved			97.3		%		80-120	05-AUG-22
Sodium (Na)-Dissolved			113.0		%		80-120	05-AUG-22
Strontium (Sr)-Dissolved			104.7		%		80-120	05-AUG-22
Sulfur (S)-Dissolved			124.5	MES	%		80-120	05-AUG-22
Tellurium (Te)-Dissolved			96.9		%		80-120	05-AUG-22
Thallium (Tl)-Dissolved			100.7		%		80-120	05-AUG-22
Thorium (Th)-Dissolved			94.8		%		80-120	05-AUG-22
Tin (Sn)-Dissolved			100.1		%		80-120	05-AUG-22
Titanium (Ti)-Dissolved			104.4		%		80-120	05-AUG-22
Tungsten (W)-Dissolved			102.5		%		80-120	05-AUG-22
Uranium (U)-Dissolved			97.7		%		80-120	05-AUG-22
Vanadium (V)-Dissolved			106.9		%		80-120	05-AUG-22
Zinc (Zn)-Dissolved			104.8		%		80-120	05-AUG-22
Zirconium (Zr)-Dissolved			96.1		%		80-120	05-AUG-22
WG3754298-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-AUG-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-AUG-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-AUG-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-AUG-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	05-AUG-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-AUG-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-AUG-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	05-AUG-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-AUG-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	05-AUG-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-AUG-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-AUG-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-AUG-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-AUG-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5837587								
WG3754298-1 MB								
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-AUG-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-AUG-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-AUG-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-AUG-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-AUG-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	05-AUG-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-AUG-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	05-AUG-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-AUG-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-AUG-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-AUG-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-AUG-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	05-AUG-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	05-AUG-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	05-AUG-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-AUG-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	05-AUG-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-AUG-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-AUG-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	05-AUG-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-AUG-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-AUG-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-AUG-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	05-AUG-22
Batch R5841553								
WG3755978-4 DUP		**L2725589-7**						
Aluminum (Al)-Dissolved		0.0913	0.0878		mg/L	3.9	20	11-AUG-22
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-AUG-22
Arsenic (As)-Dissolved		0.00051	0.00048		mg/L	6.4	20	11-AUG-22
Barium (Ba)-Dissolved		0.00548	0.00565		mg/L	3.1	20	11-AUG-22
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-AUG-22
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-AUG-22
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	11-AUG-22
Cadmium (Cd)-Dissolved		0.0000060	<0.000005(	RPD-NA	mg/L	N/A	20	11-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5841553								
WG3755978-4 DUP		**L2725589-7**						
Calcium (Ca)-Dissolved		5.56	5.70		mg/L	2.6	20	11-AUG-22
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-AUG-22
Chromium (Cr)-Dissolved		0.00022	0.00025		mg/L	13	20	11-AUG-22
Cobalt (Co)-Dissolved		0.00024	0.00025		mg/L	1.2	20	11-AUG-22
Copper (Cu)-Dissolved		0.00020	<0.00020	RPD-NA	mg/L	N/A	20	11-AUG-22
Iron (Fe)-Dissolved		0.698	0.689		mg/L	1.4	20	11-AUG-22
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-AUG-22
Lithium (Li)-Dissolved		0.0013	0.0014		mg/L	3.6	20	11-AUG-22
Magnesium (Mg)-Dissolved		1.01	1.00		mg/L	0.4	20	11-AUG-22
Manganese (Mn)-Dissolved		0.0527	0.0533		mg/L	1.0	20	11-AUG-22
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-AUG-22
Nickel (Ni)-Dissolved		0.00060	0.00057		mg/L	5.2	20	11-AUG-22
Phosphorus (P)-Dissolved		<0.030	<0.030	RPD-NA	mg/L	N/A	20	11-AUG-22
Potassium (K)-Dissolved		0.070	0.072		mg/L	2.8	20	11-AUG-22
Rubidium (Rb)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	11-AUG-22
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-AUG-22
Silicon (Si)-Dissolved		3.75	3.71		mg/L	1.0	20	11-AUG-22
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-AUG-22
Sodium (Na)-Dissolved		1.00	1.01		mg/L	0.5	20	11-AUG-22
Strontium (Sr)-Dissolved		0.0122	0.0127		mg/L	4.2	20	11-AUG-22
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	11-AUG-22
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	11-AUG-22
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-AUG-22
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-AUG-22
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-AUG-22
Titanium (Ti)-Dissolved		0.00080	0.00083		mg/L	3.9	20	11-AUG-22
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-AUG-22
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-AUG-22
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	11-AUG-22
Zinc (Zn)-Dissolved		0.0023	0.0028		mg/L	19	20	11-AUG-22
Zirconium (Zr)-Dissolved		<0.00020	0.00024	RPD-NA	mg/L	N/A	20	11-AUG-22
WG3755978-2 LCS								
Aluminum (Al)-Dissolved			101.3		%		80-120	11-AUG-22
Antimony (Sb)-Dissolved			103.0		%		80-120	11-AUG-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5841553								
WG3755978-2 LCS								
Arsenic (As)-Dissolved			99.4		%		80-120	11-AUG-22
Barium (Ba)-Dissolved			102.1		%		80-120	11-AUG-22
Beryllium (Be)-Dissolved			105.2		%		80-120	11-AUG-22
Bismuth (Bi)-Dissolved			108.8		%		80-120	11-AUG-22
Boron (B)-Dissolved			103.3		%		80-120	11-AUG-22
Cadmium (Cd)-Dissolved			107.9		%		80-120	11-AUG-22
Calcium (Ca)-Dissolved			106.2		%		80-120	11-AUG-22
Cesium (Cs)-Dissolved			100.7		%		80-120	11-AUG-22
Chromium (Cr)-Dissolved			99.6		%		80-120	11-AUG-22
Cobalt (Co)-Dissolved			99.1		%		80-120	11-AUG-22
Copper (Cu)-Dissolved			98.5		%		80-120	11-AUG-22
Iron (Fe)-Dissolved			96.4		%		80-120	11-AUG-22
Lead (Pb)-Dissolved			96.8		%		80-120	11-AUG-22
Lithium (Li)-Dissolved			106.5		%		80-120	11-AUG-22
Magnesium (Mg)-Dissolved			99.98		%		80-120	11-AUG-22
Manganese (Mn)-Dissolved			102.2		%		80-120	11-AUG-22
Molybdenum (Mo)-Dissolved			103.7		%		80-120	11-AUG-22
Nickel (Ni)-Dissolved			97.8		%		80-120	11-AUG-22
Phosphorus (P)-Dissolved			104.6		%		80-120	11-AUG-22
Potassium (K)-Dissolved			101.6		%		80-120	11-AUG-22
Rubidium (Rb)-Dissolved			102.7		%		80-120	11-AUG-22
Selenium (Se)-Dissolved			98.5		%		80-120	11-AUG-22
Silicon (Si)-Dissolved			108.6		%		80-120	11-AUG-22
Silver (Ag)-Dissolved			101.9		%		80-120	11-AUG-22
Sodium (Na)-Dissolved			97.7		%		80-120	11-AUG-22
Strontium (Sr)-Dissolved			98.6		%		80-120	11-AUG-22
Sulfur (S)-Dissolved			115.0		%		80-120	11-AUG-22
Tellurium (Te)-Dissolved			100.5		%		80-120	11-AUG-22
Thallium (Tl)-Dissolved			103.2		%		80-120	11-AUG-22
Thorium (Th)-Dissolved			97.5		%		80-120	11-AUG-22
Tin (Sn)-Dissolved			102.8		%		80-120	11-AUG-22
Titanium (Ti)-Dissolved			97.2		%		80-120	11-AUG-22
Tungsten (W)-Dissolved			102.1		%		80-120	11-AUG-22
Uranium (U)-Dissolved			96.1		%		80-120	11-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5841553								
WG3755978-2 LCS								
Vanadium (V)-Dissolved			98.9		%		80-120	11-AUG-22
Zinc (Zn)-Dissolved			101.1		%		80-120	11-AUG-22
Zirconium (Zr)-Dissolved			97.5		%		80-120	11-AUG-22
WG3755978-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-AUG-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-AUG-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-AUG-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-AUG-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	11-AUG-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-AUG-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-AUG-22
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	11-AUG-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-AUG-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	11-AUG-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-AUG-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-AUG-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-AUG-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-AUG-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-AUG-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-AUG-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-AUG-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-AUG-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-AUG-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-AUG-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	11-AUG-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-AUG-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	11-AUG-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-AUG-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-AUG-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-AUG-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-AUG-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	11-AUG-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	11-AUG-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	11-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5841553								
WG3755978-1 MB								
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-AUG-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	11-AUG-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-AUG-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-AUG-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	11-AUG-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-AUG-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-AUG-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-AUG-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	11-AUG-22
WG3755978-5 MS		**L2725589-7**						
Aluminum (Al)-Dissolved			95.6		%		70-130	11-AUG-22
Antimony (Sb)-Dissolved			101.8		%		70-130	11-AUG-22
Arsenic (As)-Dissolved			99.9		%		70-130	11-AUG-22
Barium (Ba)-Dissolved			98.4		%		70-130	11-AUG-22
Beryllium (Be)-Dissolved			101.7		%		70-130	11-AUG-22
Bismuth (Bi)-Dissolved			97.3		%		70-130	11-AUG-22
Boron (B)-Dissolved			95.3		%		70-130	11-AUG-22
Cadmium (Cd)-Dissolved			108.4		%		70-130	11-AUG-22
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	11-AUG-22
Cesium (Cs)-Dissolved			103.7		%		70-130	11-AUG-22
Chromium (Cr)-Dissolved			96.4		%		70-130	11-AUG-22
Cobalt (Co)-Dissolved			95.8		%		70-130	11-AUG-22
Copper (Cu)-Dissolved			95.1		%		70-130	11-AUG-22
Iron (Fe)-Dissolved			93.7		%		70-130	11-AUG-22
Lead (Pb)-Dissolved			98.3		%		70-130	11-AUG-22
Lithium (Li)-Dissolved			101.1		%		70-130	11-AUG-22
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	11-AUG-22
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	11-AUG-22
Molybdenum (Mo)-Dissolved			100.0		%		70-130	11-AUG-22
Nickel (Ni)-Dissolved			94.9		%		70-130	11-AUG-22
Phosphorus (P)-Dissolved			98.5		%		70-130	11-AUG-22
Potassium (K)-Dissolved			97.0		%		70-130	11-AUG-22
Rubidium (Rb)-Dissolved			101.5		%		70-130	11-AUG-22
Selenium (Se)-Dissolved			102.9		%		70-130	11-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5841553								
WG3755978-5 MS		**L2725589-7**						
Silicon (Si)-Dissolved			90.9		%		70-130	11-AUG-22
Silver (Ag)-Dissolved			99.9		%		70-130	11-AUG-22
Sodium (Na)-Dissolved			93.1		%		70-130	11-AUG-22
Strontium (Sr)-Dissolved			99.6		%		70-130	11-AUG-22
Sulfur (S)-Dissolved			101.0		%		70-130	11-AUG-22
Tellurium (Te)-Dissolved			101.1		%		70-130	11-AUG-22
Thallium (Tl)-Dissolved			101.5		%		70-130	11-AUG-22
Thorium (Th)-Dissolved			108.0		%		70-130	11-AUG-22
Tin (Sn)-Dissolved			99.8		%		70-130	11-AUG-22
Titanium (Ti)-Dissolved			91.4		%		70-130	11-AUG-22
Tungsten (W)-Dissolved			97.9		%		70-130	11-AUG-22
Uranium (U)-Dissolved			101.5		%		70-130	11-AUG-22
Vanadium (V)-Dissolved			96.1		%		70-130	11-AUG-22
Zinc (Zn)-Dissolved			99.4		%		70-130	11-AUG-22
Zirconium (Zr)-Dissolved			95.1		%		70-130	11-AUG-22
MET-T-CCMS-WP	**Water**							
Batch R5839578								
WG3755357-4 DUP		**L2725589-1**						
Aluminum (Al)-Total		0.193	0.193		mg/L	0.1	20	09-AUG-22
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-AUG-22
Arsenic (As)-Total		0.00027	0.00027		mg/L	3.4	20	09-AUG-22
Barium (Ba)-Total		0.00764	0.00758		mg/L	0.8	20	09-AUG-22
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-AUG-22
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-AUG-22
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	09-AUG-22
Cadmium (Cd)-Total		0.0000223	0.0000232		mg/L	3.8	20	09-AUG-22
Calcium (Ca)-Total		6.16	6.08		mg/L	1.3	20	09-AUG-22
Cesium (Cs)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-AUG-22
Chromium (Cr)-Total		0.00033	0.00034		mg/L	1.9	20	09-AUG-22
Cobalt (Co)-Total		0.00082	0.00085		mg/L	4.0	20	09-AUG-22
Copper (Cu)-Total		0.00588	0.00589		mg/L	0.2	20	09-AUG-22
Iron (Fe)-Total		0.845	0.843		mg/L	0.2	20	09-AUG-22
Lead (Pb)-Total		0.000088	0.000094		mg/L	5.9	20	09-AUG-22
Lithium (Li)-Total		0.0012	0.0012		mg/L	0.9	20	09-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5839578								
WG3755357-4 DUP		**L2725589-1**						
Magnesium (Mg)-Total		1.40	1.38		mg/L	0.8	20	09-AUG-22
Manganese (Mn)-Total		0.0431	0.0437		mg/L	1.5	20	09-AUG-22
Molybdenum (Mo)-Total		0.000072	0.000060		mg/L	17	20	09-AUG-22
Nickel (Ni)-Total		0.0707	0.0705		mg/L	0.3	20	09-AUG-22
Potassium (K)-Total		0.735	0.735		mg/L	0.0	20	09-AUG-22
Phosphorus (P)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	09-AUG-22
Rubidium (Rb)-Total		0.00113	0.00120		mg/L	6.4	20	09-AUG-22
Selenium (Se)-Total		0.000059	0.000058		mg/L	2.3	20	09-AUG-22
Silicon (Si)-Total		2.48	2.40		mg/L	3.1	20	09-AUG-22
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-AUG-22
Sodium (Na)-Total		1.30	1.32		mg/L	0.9	20	09-AUG-22
Strontium (Sr)-Total		0.0179	0.0178		mg/L	0.7	20	09-AUG-22
Sulfur (S)-Total		3.41	3.46		mg/L	1.3	20	09-AUG-22
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-AUG-22
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-AUG-22
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-AUG-22
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-AUG-22
Titanium (Ti)-Total		0.00175	0.00185		mg/L	5.6	20	09-AUG-22
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-AUG-22
Uranium (U)-Total		0.000027	0.000030		mg/L	11	20	09-AUG-22
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	09-AUG-22
Zinc (Zn)-Total		0.0151	0.0146		mg/L	2.9	20	09-AUG-22
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-AUG-22
WG3755357-2 LCS								
Aluminum (Al)-Total			104.4		%		80-120	09-AUG-22
Antimony (Sb)-Total			104.9		%		80-120	09-AUG-22
Arsenic (As)-Total			99.5		%		80-120	09-AUG-22
Barium (Ba)-Total			101.4		%		80-120	09-AUG-22
Beryllium (Be)-Total			101.8		%		80-120	09-AUG-22
Bismuth (Bi)-Total			94.8		%		80-120	09-AUG-22
Boron (B)-Total			95.7		%		80-120	09-AUG-22
Cadmium (Cd)-Total			102.1		%		80-120	09-AUG-22
Calcium (Ca)-Total			100.1		%		80-120	09-AUG-22
Cesium (Cs)-Total			101.0		%		80-120	09-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5839578								
WG3755357-2 LCS								
Chromium (Cr)-Total			101.6		%		80-120	09-AUG-22
Cobalt (Co)-Total			101.6		%		80-120	09-AUG-22
Copper (Cu)-Total			99.7		%		80-120	09-AUG-22
Iron (Fe)-Total			95.5		%		80-120	09-AUG-22
Lead (Pb)-Total			96.5		%		80-120	09-AUG-22
Lithium (Li)-Total			102.2		%		80-120	09-AUG-22
Magnesium (Mg)-Total			102.8		%		80-120	09-AUG-22
Manganese (Mn)-Total			103.8		%		80-120	09-AUG-22
Molybdenum (Mo)-Total			103.4		%		80-120	09-AUG-22
Nickel (Ni)-Total			100.3		%		80-120	09-AUG-22
Potassium (K)-Total			102.0		%		80-120	09-AUG-22
Phosphorus (P)-Total			102.7		%		80-120	09-AUG-22
Rubidium (Rb)-Total			96.9		%		80-120	09-AUG-22
Selenium (Se)-Total			100.9		%		80-120	09-AUG-22
Silicon (Si)-Total			101.1		%		80-120	09-AUG-22
Silver (Ag)-Total			101.6		%		80-120	09-AUG-22
Sodium (Na)-Total			104.1		%		80-120	09-AUG-22
Strontium (Sr)-Total			100.2		%		80-120	09-AUG-22
Sulfur (S)-Total			99.3		%		80-120	09-AUG-22
Tellurium (Te)-Total			93.4		%		80-120	09-AUG-22
Thallium (Tl)-Total			98.7		%		80-120	09-AUG-22
Thorium (Th)-Total			91.4		%		80-120	09-AUG-22
Tin (Sn)-Total			102.3		%		80-120	09-AUG-22
Titanium (Ti)-Total			98.8		%		80-120	09-AUG-22
Tungsten (W)-Total			100.7		%		80-120	09-AUG-22
Uranium (U)-Total			91.6		%		80-120	09-AUG-22
Vanadium (V)-Total			100.5		%		80-120	09-AUG-22
Zinc (Zn)-Total			102.3		%		80-120	09-AUG-22
Zirconium (Zr)-Total			98.5		%		80-120	09-AUG-22
WG3755357-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	09-AUG-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	09-AUG-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	09-AUG-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	09-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5839578								
WG3755357-1 MB								
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	09-AUG-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	09-AUG-22
Boron (B)-Total			<0.010		mg/L		0.01	09-AUG-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	09-AUG-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	09-AUG-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	09-AUG-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	09-AUG-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	09-AUG-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	09-AUG-22
Iron (Fe)-Total			<0.010		mg/L		0.01	09-AUG-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	09-AUG-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	09-AUG-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	09-AUG-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	09-AUG-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	09-AUG-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	09-AUG-22
Potassium (K)-Total			<0.050		mg/L		0.05	09-AUG-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	09-AUG-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	09-AUG-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	09-AUG-22
Silicon (Si)-Total			<0.10		mg/L		0.1	09-AUG-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	09-AUG-22
Sodium (Na)-Total			<0.050		mg/L		0.05	09-AUG-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	09-AUG-22
Sulfur (S)-Total			<0.50		mg/L		0.5	09-AUG-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	09-AUG-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	09-AUG-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	09-AUG-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	09-AUG-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	09-AUG-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	09-AUG-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	09-AUG-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	09-AUG-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	09-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5839578								
WG3755357-1 MB								
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	09-AUG-22
WG3755357-5 MS		**L2725589-1**						
Aluminum (Al)-Total			93.5		%		70-130	09-AUG-22
Antimony (Sb)-Total			101.1		%		70-130	09-AUG-22
Arsenic (As)-Total			98.7		%		70-130	09-AUG-22
Barium (Ba)-Total			99.5		%		70-130	09-AUG-22
Beryllium (Be)-Total			99.8		%		70-130	09-AUG-22
Bismuth (Bi)-Total			97.6		%		70-130	09-AUG-22
Boron (B)-Total			97.0		%		70-130	09-AUG-22
Cadmium (Cd)-Total			102.6		%		70-130	09-AUG-22
Calcium (Ca)-Total			N/A	MS-B	%		-	09-AUG-22
Cesium (Cs)-Total			104.6		%		70-130	09-AUG-22
Chromium (Cr)-Total			101.6		%		70-130	09-AUG-22
Cobalt (Co)-Total			102.0		%		70-130	09-AUG-22
Copper (Cu)-Total			99.4		%		70-130	09-AUG-22
Iron (Fe)-Total			96.2		%		70-130	09-AUG-22
Lead (Pb)-Total			98.5		%		70-130	09-AUG-22
Lithium (Li)-Total			97.2		%		70-130	09-AUG-22
Magnesium (Mg)-Total			N/A	MS-B	%		-	09-AUG-22
Manganese (Mn)-Total			N/A	MS-B	%		-	09-AUG-22
Molybdenum (Mo)-Total			102.2		%		70-130	09-AUG-22
Nickel (Ni)-Total			N/A	MS-B	%		-	09-AUG-22
Potassium (K)-Total			98.5		%		70-130	09-AUG-22
Phosphorus (P)-Total			100.5		%		70-130	09-AUG-22
Rubidium (Rb)-Total			98.4		%		70-130	09-AUG-22
Selenium (Se)-Total			107.1		%		70-130	09-AUG-22
Silicon (Si)-Total			93.7		%		70-130	09-AUG-22
Silver (Ag)-Total			103.7		%		70-130	09-AUG-22
Sodium (Na)-Total			100.6		%		70-130	09-AUG-22
Strontium (Sr)-Total			99.3		%		70-130	09-AUG-22
Sulfur (S)-Total			103.2		%		70-130	09-AUG-22
Tellurium (Te)-Total			100.2		%		70-130	09-AUG-22
Thallium (Tl)-Total			99.2		%		70-130	09-AUG-22
Thorium (Th)-Total			96.0		%		70-130	09-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5839578								
WG3755357-5 MS		**L2725589-1**						
Tin (Sn)-Total			98.5		%		70-130	09-AUG-22
Titanium (Ti)-Total			95.8		%		70-130	09-AUG-22
Tungsten (W)-Total			97.2		%		70-130	09-AUG-22
Uranium (U)-Total			95.0		%		70-130	09-AUG-22
Vanadium (V)-Total			100.5		%		70-130	09-AUG-22
Zinc (Zn)-Total			101.2		%		70-130	09-AUG-22
Zirconium (Zr)-Total			99.4		%		70-130	09-AUG-22
N-TOTKJ-WP	**Water**							
Batch R5836041								
WG3753995-14 LCS								
Total Kjeldahl Nitrogen			95.3		%		75-125	04-AUG-22
WG3753995-13 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	04-AUG-22
Batch R5837861								
WG3755341-3 DUP		**L2725589-3**						
Total Kjeldahl Nitrogen		0.29	0.29		mg/L	0.0	20	08-AUG-22
WG3755341-2 LCS								
Total Kjeldahl Nitrogen			110.0		%		75-125	08-AUG-22
WG3755341-1 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	08-AUG-22
WG3755341-4 MS		**L2725589-3**						
Total Kjeldahl Nitrogen			107.5		%		70-130	08-AUG-22
Batch R5840143								
WG3755433-2 LCS								
Total Kjeldahl Nitrogen			104.3		%		75-125	10-AUG-22
WG3755433-1 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	10-AUG-22
NH3-COL-WP	**Water**							
Batch R5850436								
WG3760233-3 DUP		**L2725589-1**						
Ammonia, Total (as N)		0.014	0.018	J	mg/L	0.004	0.02	30-AUG-22
WG3760233-2 LCS								
Ammonia, Total (as N)			99.2		%		85-115	30-AUG-22
WG3760233-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	30-AUG-22
WG3760233-4 MS		**L2725589-1**						

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-COL-WP	**Water**							
Batch R5850436								
WG3760233-4 MS		**L2725589-1**						
Ammonia, Total (as N)			87.3		%		75-125	30-AUG-22
NO2-L-IC-N-WP	**Water**							
Batch R5834777								
WG3753652-2 LCS								
Nitrite (as N)			99.6		%		90-110	30-JUL-22
WG3753652-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	30-JUL-22
Batch R5836061								
WG3754607-2 LCS								
Nitrite (as N)			100.0		%		90-110	04-AUG-22
WG3754607-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	04-AUG-22
Batch R5836260								
WG3754238-2 LCS								
Nitrite (as N)			99.97		%		90-110	03-AUG-22
WG3754238-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	03-AUG-22
NO3-L-IC-N-WP	**Water**							
Batch R5834777								
WG3753652-2 LCS								
Nitrate (as N)			99.1		%		90-110	30-JUL-22
WG3753652-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	30-JUL-22
Batch R5836061								
WG3754607-2 LCS								
Nitrate (as N)			99.0		%		90-110	04-AUG-22
WG3754607-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	04-AUG-22
Batch R5836260								
WG3754238-2 LCS								
Nitrate (as N)			99.1		%		90-110	03-AUG-22
WG3754238-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	03-AUG-22
P-T-COL-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-WP	**Water**							
Batch R5849458								
WG3759653-7 DUP		**L2725589-5**						
Phosphorus (P)-Total		0.0333	0.0363		mg/L	8.6	20	29-AUG-22
WG3759653-2 LCS								
Phosphorus (P)-Total			97.0		%		80-120	29-AUG-22
WG3759653-6 LCS								
Phosphorus (P)-Total			96.7		%		80-120	29-AUG-22
WG3759653-1 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	29-AUG-22
WG3759653-5 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	29-AUG-22
WG3759653-8 MS		**L2725589-6**						
Phosphorus (P)-Total			95.1		%		70-130	29-AUG-22
P-T-L-COL-WP	**Water**							
Batch R5851576								
WG3760273-2 LCS								
Phosphorus (P)-Total			98.3		%		80-120	08-SEP-22
WG3760273-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	08-SEP-22
SO4-IC-N-WP	**Water**							
Batch R5834777								
WG3753652-2 LCS								
Sulfate (SO4)			100.0		%		90-110	30-JUL-22
WG3753652-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	30-JUL-22
Batch R5836061								
WG3754607-2 LCS								
Sulfate (SO4)			99.9		%		90-110	04-AUG-22
WG3754607-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	04-AUG-22
Batch R5836260								
WG3754238-2 LCS								
Sulfate (SO4)			100.2		%		90-110	03-AUG-22
WG3754238-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	03-AUG-22
SOLIDS-TOTSUS-LR-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TOTSUS-LR-WP	**Water**							
Batch R5834276								
WG3753849-5 LCS								
Total Suspended Solids			87.2		%		85-115	02-AUG-22
WG3753849-8 LCS								
Total Suspended Solids			94.5		%		85-115	02-AUG-22
WG3753849-4 MB								
Total Suspended Solids			<1.0		mg/L		1	02-AUG-22
WG3753849-7 MB								
Total Suspended Solids			<1.0		mg/L		1	02-AUG-22
Batch R5835158								
WG3753545-3 DUP		**L2725589-1**						
Total Suspended Solids		1.8	2.3	J	mg/L	0.5	2	30-JUL-22
WG3753545-2 LCS								
Total Suspended Solids			90.5		%		85-115	30-JUL-22
WG3753545-1 MB								
Total Suspended Solids			<1.0		mg/L		1	30-JUL-22
Batch R5837581								
WG3754042-5 LCS								
Total Suspended Solids			103.3		%		85-115	03-AUG-22
WG3754042-4 MB								
Total Suspended Solids			<1.0		mg/L		1	03-AUG-22
Batch R5838576								
WG3754870-3 DUP		**L2725589-17**						
Total Suspended Solids		1.7	<1.0	RPD-NA	mg/L	N/A	20	05-AUG-22
WG3754870-2 LCS								
Total Suspended Solids			98.3		%		85-115	05-AUG-22
WG3754870-1 MB								
Total Suspended Solids			<1.0		mg/L		1	05-AUG-22

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Total Suspended Solids							
	3	24-JUL-22 10:59	02-AUG-22 09:00	7	9	days	EHT
	4	24-JUL-22 11:32	02-AUG-22 09:00	7	9	days	EHT
	5	24-JUL-22 11:59	02-AUG-22 09:00	7	9	days	EHT
	6	24-JUL-22 12:34	02-AUG-22 09:00	7	9	days	EHT
	7	24-JUL-22 09:29	05-AUG-22 09:00	7	12	days	EHT
	8	25-JUL-22 10:30	02-AUG-22 09:00	7	8	days	EHT
	9	25-JUL-22 11:50	02-AUG-22 09:00	7	8	days	EHT
	10	25-JUL-22 11:55	02-AUG-22 09:00	7	8	days	EHT
	11	25-JUL-22 14:11	02-AUG-22 09:00	7	8	days	EHT
	14	26-JUL-22 13:49	05-AUG-22 09:00	7	10	days	EHT
	16	27-JUL-22 13:07	05-AUG-22 09:00	7	9	days	EHT
	17	25-JUL-22 11:55	05-AUG-22 09:00	7	11	days	EHT
	18	25-JUL-22 11:55	02-AUG-22 09:00	7	8	days	EHT
	19	25-JUL-22 11:55	02-AUG-22 09:00	7	8	days	EHT
Anions and Nutrients							
Alkalinity, Total (as CaCO3)							
	7	24-JUL-22 09:29	08-AUG-22 07:49	14	15	days	EHT
Ammonia by colour							
	1	24-JUL-22 09:29	30-AUG-22 13:38	28	37	days	EHT
	2	24-JUL-22 10:22	30-AUG-22 11:45	28	37	days	EHT
	3	24-JUL-22 10:59	30-AUG-22 11:45	28	37	days	EHT
	4	24-JUL-22 11:32	30-AUG-22 13:38	28	37	days	EHT
	5	24-JUL-22 11:59	30-AUG-22 11:49	28	37	days	EHT
	6	24-JUL-22 12:34	30-AUG-22 11:49	28	37	days	EHT
	7	24-JUL-22 09:29	30-AUG-22 11:49	28	37	days	EHT
	8	25-JUL-22 10:30	30-AUG-22 11:53	28	36	days	EHT
	9	25-JUL-22 11:50	30-AUG-22 11:53	28	36	days	EHT
	10	25-JUL-22 11:55	30-AUG-22 11:57	28	36	days	EHT
	11	25-JUL-22 14:11	30-AUG-22 11:57	28	36	days	EHT
	12	26-JUL-22 12:43	30-AUG-22 11:57	28	35	days	EHT
	13	26-JUL-22 13:20	30-AUG-22 12:01	28	35	days	EHT
	14	26-JUL-22 13:49	30-AUG-22 12:01	28	35	days	EHT
	15	27-JUL-22 12:45	30-AUG-22 12:01	28	34	days	EHT
	16	27-JUL-22 13:07	30-AUG-22 12:04	28	34	days	EHT
	17	25-JUL-22 11:55	30-AUG-22 12:04	28	36	days	EHT
	18	25-JUL-22 11:55	30-AUG-22 12:04	28	36	days	EHT
	19	25-JUL-22 11:55	30-AUG-22 12:08	28	36	days	EHT
Nitrate in Water by IC (Low Level)							
	1	24-JUL-22 09:29	30-JUL-22 09:15	3	6	days	EHTR
	2	24-JUL-22 10:22	30-JUL-22 09:15	3	6	days	EHTR
	3	24-JUL-22 10:59	03-AUG-22 11:00	3	10	days	EHTR
	4	24-JUL-22 11:32	03-AUG-22 11:00	3	10	days	EHTR
	5	24-JUL-22 11:59	03-AUG-22 11:00	3	10	days	EHTR
	6	24-JUL-22 12:34	30-JUL-22 09:15	3	6	days	EHTR
	7	24-JUL-22 09:29	04-AUG-22 10:30	3	11	days	EHTR
	8	25-JUL-22 10:30	03-AUG-22 11:00	3	9	days	EHTR
	9	25-JUL-22 11:50	03-AUG-22 11:00	3	9	days	EHTR
	10	25-JUL-22 11:55	03-AUG-22 11:00	3	9	days	EHTR
	11	25-JUL-22 14:11	03-AUG-22 11:00	3	9	days	EHTR
	12	26-JUL-22 12:43	03-AUG-22 11:00	3	8	days	EHTL
	13	26-JUL-22 13:20	30-JUL-22 09:15	3	4	days	EHTL
	14	26-JUL-22 13:49	04-AUG-22 10:30	3	9	days	EHTL
	15	27-JUL-22 12:45	03-AUG-22 11:00	3	7	days	EHT
	16	27-JUL-22 13:07	04-AUG-22 10:30	3	8	days	EHT
	17	25-JUL-22 11:55	04-AUG-22 10:30	3	10	days	EHTR
	18	25-JUL-22 11:55	03-AUG-22 11:00	3	9	days	EHTR

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Anions and Nutrients							
Nitrate in Water by IC (Low Level)							
	19	25-JUL-22 11:55	03-AUG-22 11:00	3	9	days	EHTR
Nitrite in Water by IC (Low Level)							
	1	24-JUL-22 09:29	30-JUL-22 09:15	3	6	days	EHTR
	2	24-JUL-22 10:22	30-JUL-22 09:15	3	6	days	EHTR
	3	24-JUL-22 10:59	03-AUG-22 11:00	3	10	days	EHTR
	4	24-JUL-22 11:32	03-AUG-22 11:00	3	10	days	EHTR
	5	24-JUL-22 11:59	03-AUG-22 11:00	3	10	days	EHTR
	6	24-JUL-22 12:34	30-JUL-22 09:15	3	6	days	EHTR
	7	24-JUL-22 09:29	04-AUG-22 10:30	3	11	days	EHTR
	8	25-JUL-22 10:30	03-AUG-22 11:00	3	9	days	EHTR
	9	25-JUL-22 11:50	03-AUG-22 11:00	3	9	days	EHTR
	10	25-JUL-22 11:55	03-AUG-22 11:00	3	9	days	EHTR
	11	25-JUL-22 14:11	03-AUG-22 11:00	3	9	days	EHTR
	12	26-JUL-22 12:43	03-AUG-22 11:00	3	8	days	EHTL
	13	26-JUL-22 13:20	30-JUL-22 09:15	3	4	days	EHTL
	14	26-JUL-22 13:49	04-AUG-22 10:30	3	9	days	EHTL
	15	27-JUL-22 12:45	03-AUG-22 11:00	3	7	days	EHT
	16	27-JUL-22 13:07	04-AUG-22 10:30	3	8	days	EHT
	17	25-JUL-22 11:55	04-AUG-22 10:30	3	10	days	EHTR
	18	25-JUL-22 11:55	03-AUG-22 11:00	3	9	days	EHTR
	19	25-JUL-22 11:55	03-AUG-22 11:00	3	9	days	EHTR
Phosphorus, Total							
	1	24-JUL-22 09:29	29-AUG-22 14:30	28	36	days	EHT
	2	24-JUL-22 10:22	29-AUG-22 14:30	28	36	days	EHT
	3	24-JUL-22 10:59	29-AUG-22 14:30	28	36	days	EHT
	4	24-JUL-22 11:32	29-AUG-22 14:30	28	36	days	EHT
	5	24-JUL-22 11:59	29-AUG-22 14:30	28	36	days	EHT
	6	24-JUL-22 12:34	29-AUG-22 14:30	28	36	days	EHT
	7	24-JUL-22 09:29	29-AUG-22 14:30	28	36	days	EHT
	8	25-JUL-22 10:30	29-AUG-22 14:30	28	35	days	EHT
	9	25-JUL-22 11:50	29-AUG-22 14:30	28	35	days	EHT
	10	25-JUL-22 11:55	29-AUG-22 14:30	28	35	days	EHT
	11	25-JUL-22 14:11	29-AUG-22 14:30	28	35	days	EHT
	12	26-JUL-22 12:43	29-AUG-22 14:30	28	34	days	EHT
	13	26-JUL-22 13:20	29-AUG-22 14:30	28	34	days	EHT
	14	26-JUL-22 13:49	29-AUG-22 14:30	28	34	days	EHT
	15	27-JUL-22 12:45	29-AUG-22 14:30	28	33	days	EHT
	16	27-JUL-22 13:07	29-AUG-22 14:30	28	33	days	EHT
	17	25-JUL-22 11:55	29-AUG-22 14:30	28	35	days	EHT
	18	25-JUL-22 11:55	29-AUG-22 14:30	28	35	days	EHT
	19	25-JUL-22 11:55	29-AUG-22 14:30	28	35	days	EHT
Phosphorus, Total							
	18	25-JUL-22 11:55	08-SEP-22 13:20	28	45	days	EHT
	19	25-JUL-22 11:55	08-SEP-22 13:20	28	45	days	EHT
Cyanides							
Low Level Free Cyanide in water by CFA							
	5	24-JUL-22 11:59	11-AUG-22 10:54	14	18	days	EHT
	7	24-JUL-22 09:29	12-AUG-22 12:05	14	19	days	EHT
Low Level Free Cyanide in water by CFA							
	18	25-JUL-22 11:55	31-AUG-22 00:00	14	37	days	EHT
Low Level Total Cyanide in water by CFA							
	4	24-JUL-22 11:32	11-AUG-22 10:54	14	18	days	EHT
Low Level Total Cyanide in water by CFA							
	18	25-JUL-22 11:55	31-AUG-22 00:00	14	37	days	EHT

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Cyanides							
Low level WAD Cyanide in water by CFA							
	7	24-JUL-22 09:29	12-AUG-22 12:05	14	19	days	EHT
Low level WAD Cyanide in water by CFA							
	18	25-JUL-22 11:55	31-AUG-22 00:00	14	37	days	EHT
Organic / Inorganic Carbon							
Dissolved Organic Carbon by Combustion							
	1	24-JUL-22 09:29	22-AUG-22 15:00	28	29	days	EHT
	2	24-JUL-22 10:22	22-AUG-22 15:00	28	29	days	EHT
	3	24-JUL-22 10:59	22-AUG-22 15:00	28	29	days	EHT
	4	24-JUL-22 11:32	22-AUG-22 15:00	28	29	days	EHT
	5	24-JUL-22 11:59	22-AUG-22 15:00	28	29	days	EHT
	6	24-JUL-22 12:34	22-AUG-22 15:00	28	29	days	EHT
	7	24-JUL-22 09:29	22-AUG-22 15:00	28	29	days	EHT
	10	25-JUL-22 11:55	26-AUG-22 15:00	28	32	days	EHT
	11	25-JUL-22 14:11	26-AUG-22 15:00	28	32	days	EHT
	12	26-JUL-22 12:43	26-AUG-22 15:00	28	31	days	EHT
	13	26-JUL-22 13:20	26-AUG-22 15:00	28	31	days	EHT
	14	26-JUL-22 13:49	26-AUG-22 15:00	28	31	days	EHT
	15	27-JUL-22 12:45	26-AUG-22 15:00	28	30	days	EHT
	16	27-JUL-22 13:07	26-AUG-22 15:00	28	30	days	EHT
	17	25-JUL-22 11:55	26-AUG-22 15:00	28	32	days	EHT
	18	25-JUL-22 11:55	26-AUG-22 15:00	28	32	days	EHT
	19	25-JUL-22 11:55	26-AUG-22 15:00	28	32	days	EHT
Total Organic Carbon by Combustion							
	1	24-JUL-22 09:29	22-AUG-22 15:00	28	29	days	EHT
	2	24-JUL-22 10:22	22-AUG-22 15:00	28	29	days	EHT
	3	24-JUL-22 10:59	22-AUG-22 15:00	28	29	days	EHT
	4	24-JUL-22 11:32	22-AUG-22 15:00	28	29	days	EHT
	5	24-JUL-22 11:59	22-AUG-22 15:00	28	29	days	EHT
	6	24-JUL-22 12:34	22-AUG-22 15:00	28	29	days	EHT
	7	24-JUL-22 09:29	26-AUG-22 15:00	28	33	days	EHT
	10	25-JUL-22 11:55	26-AUG-22 15:00	28	32	days	EHT
	11	25-JUL-22 14:11	26-AUG-22 15:00	28	32	days	EHT
	12	26-JUL-22 12:43	26-AUG-22 15:00	28	31	days	EHT
	13	26-JUL-22 13:20	26-AUG-22 15:00	28	31	days	EHT
	14	26-JUL-22 13:49	26-AUG-22 15:00	28	31	days	EHT
	15	27-JUL-22 12:45	26-AUG-22 15:00	28	30	days	EHT
	16	27-JUL-22 13:07	26-AUG-22 15:00	28	30	days	EHT
	17	25-JUL-22 11:55	26-AUG-22 15:00	28	32	days	EHT
	18	25-JUL-22 11:55	26-AUG-22 15:00	28	32	days	EHT
	19	25-JUL-22 11:55	26-AUG-22 15:00	28	32	days	EHT
Inorganic Parameters							
Acidity (as CaCO3)							
	3	24-JUL-22 10:59	09-AUG-22 00:00	14	16	days	EHT
	8	25-JUL-22 10:30	09-AUG-22 00:00	14	15	days	EHT
	9	25-JUL-22 11:50	09-AUG-22 00:00	14	15	days	EHT
	10	25-JUL-22 11:55	09-AUG-22 00:00	14	15	days	EHT
	17	25-JUL-22 11:55	09-AUG-22 00:00	14	15	days	EHT
	18	25-JUL-22 11:55	09-AUG-22 00:00	14	15	days	EHT
	19	25-JUL-22 11:55	09-AUG-22 00:00	14	15	days	EHT
Total Metals							
Total Mercury in Water by CVAFS (Ultra)							
	1	24-JUL-22 09:29	31-AUG-22 14:17	28	38	days	EHT
	2	24-JUL-22 10:22	31-AUG-22 14:17	28	38	days	EHT
	3	24-JUL-22 10:59	31-AUG-22 14:17	28	38	days	EHT
	4	24-JUL-22 11:32	31-AUG-22 14:17	28	38	days	EHT

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Total Metals							
Total Mercury in Water by CVAFS (Ultra)							
	5	24-JUL-22 11:59	31-AUG-22 14:17	28	38	days	EHT
	6	24-JUL-22 12:34	31-AUG-22 14:17	28	38	days	EHT
	7	24-JUL-22 09:29	31-AUG-22 14:17	28	38	days	EHT
	8	25-JUL-22 10:30	31-AUG-22 14:17	28	37	days	EHT
	9	25-JUL-22 11:50	31-AUG-22 14:17	28	37	days	EHT
	10	25-JUL-22 11:55	31-AUG-22 14:17	28	37	days	EHT
	11	25-JUL-22 14:11	31-AUG-22 14:17	28	37	days	EHT
	12	26-JUL-22 12:43	31-AUG-22 14:17	28	36	days	EHT
	13	26-JUL-22 13:20	31-AUG-22 14:17	28	36	days	EHT
	14	26-JUL-22 13:49	31-AUG-22 14:17	28	36	days	EHT
	15	27-JUL-22 12:45	31-AUG-22 14:17	28	35	days	EHT
	16	27-JUL-22 13:07	31-AUG-22 14:17	28	35	days	EHT
	17	25-JUL-22 11:55	31-AUG-22 14:17	28	37	days	EHT
	18	25-JUL-22 11:55	31-AUG-22 14:17	28	37	days	EHT
	19	25-JUL-22 11:55	31-AUG-22 14:17	28	37	days	EHT
Dissolved Metals							
Diss. Mercury in Water by CVAFS (Ultra)							
	1	24-JUL-22 09:29	31-AUG-22 11:00	28	38	days	EHT
	2	24-JUL-22 10:22	31-AUG-22 11:00	28	38	days	EHT
	3	24-JUL-22 10:59	31-AUG-22 11:00	28	38	days	EHT
	4	24-JUL-22 11:32	31-AUG-22 11:00	28	38	days	EHT
	5	24-JUL-22 11:59	31-AUG-22 11:00	28	38	days	EHT
	6	24-JUL-22 12:34	31-AUG-22 11:00	28	38	days	EHT
	7	24-JUL-22 09:29	31-AUG-22 11:00	28	38	days	EHT
	8	25-JUL-22 10:30	31-AUG-22 11:00	28	37	days	EHT
	9	25-JUL-22 11:50	31-AUG-22 11:00	28	37	days	EHT
	10	25-JUL-22 11:55	31-AUG-22 11:00	28	37	days	EHT
	11	25-JUL-22 14:11	31-AUG-22 11:00	28	37	days	EHT
	12	26-JUL-22 12:43	31-AUG-22 11:00	28	36	days	EHT
	13	26-JUL-22 13:20	31-AUG-22 11:00	28	36	days	EHT
	14	26-JUL-22 13:49	31-AUG-22 11:00	28	36	days	EHT
	15	27-JUL-22 12:45	31-AUG-22 11:00	28	35	days	EHT
	16	27-JUL-22 13:07	31-AUG-22 11:00	28	35	days	EHT
	17	25-JUL-22 11:55	31-AUG-22 11:00	28	37	days	EHT
	18	25-JUL-22 11:55	31-AUG-22 11:00	28	37	days	EHT
	19	25-JUL-22 11:55	31-AUG-22 11:00	28	37	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2725589 were received on 29-JUL-22 11:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

Quality Control Report

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number

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L2725589-COFC

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT)
Company:	Stantec Consulting	Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)	☑ Routine [R] if received by 3pm M-F - no
Contact:	Karen Mathers	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20%
Phone:	204-928-7621	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25%
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50%
Street:	500 - 311 Portage Ave	Email 1 or Fax Karen.Mathers@Stantec.com	☐ 1 day [E] if received by 3pm M-F - 100%
City/Province:	Winnipeg, MB	Email 2 jeremy.jackson@stantec.com	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.
Postal Code:	R3B 2B9	Email 3	Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.
Invoice To	Same as Report To ☐ YES ☑ NO	**Invoice Recipients**	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	For all tests with rush TATs requested, please contact your AM to confirm availability.
Company:	Alamos Gold	Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q88846	AFE/Cost Center:	PO#
Job #:	ALAMOS	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (ALS use only):		ALS Contact:	Sampler: BS

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	HG-D-U-CVAF-VA	HG-T-U-CVAF-VA	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	MEHG-D-GCAF-VA, MEHG-T-GCAF	CN-TL, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
1	AQM88	24-07-22	0939	W	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
2	AQM89C		1033		1																	
3	AQM71		1059																			
4	AQM72		1132																			
5	AQM73		1159																			
6	AQM74		1334																			
7	QC-01		—																			
8	AQF75	25-07-22	1030																			
9	AQF7D		1150																			
10	AQF38		1155																			
11	AQF43		1305																			
12	AQF44		1411																			

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	all dissolved bottles field filtered
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
							5.2

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: B. Ryad	Date: July 28/22	Time: 0930	Received by:	Date: July 29/22	Time: 145	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 2 of 2

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2725589-COFC

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Project Information	
ALS Account # / Quote #:	Q88846
Job #:	ALAMOS
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	

Reports / Recipients

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Karen.Mathers@Stantec.com

Email 2: jeremy.jackson@stantec.com

Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax:

Email 2:

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact:	Sampler: BG

Turnaround Time (TAT) Req

☑ Routine [R] if received by 3pm M-F - no surch

☐ 4 day [P4] if received by 3pm M-F - 20% rush

☐ 3 day [P3] if received by 3pm M-F - 25% rush

☐ 2 day [P2] if received by 3pm M-F - 50% rush

☐ 1 day [E] if received by 3pm M-F - 100% rush

☐ Same day [E2] if received by 10am M-S - 200

Additional fees may apply to rush requ

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please contact your AM to confirm availability.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	HG-D-U-CVAF-VA	HG-T-U-CVAF-VA	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	MEHG-D-GCAF-VA, MEHG-T-GCAF	CN-TL, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
13	AQF43	26-07-22	1243	W	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
14	AQF40	"	1330	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
15	AQF45	"	1349	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
16	AQF46	27-07-22	1248	W	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
17	AQF41	"	1357	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
18	FIELD BLANK	"	1040	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
19	TRIP BLANK	"	—	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

all dissolved bottles field filtered

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
							5.2

SHIPMENT RELEASE (client use)		
Released by: B. Bynard	Date: July 28/22	Time: 0930

INITIAL SHIPMENT RECEPTION (ALS use only)		
Received by:	Date: July 29/22	Time: 1145

FINAL SHIPMENT RECEPTION (ALS use only)		
Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Alamos Gold Inc.
ATTN: KAREN MATHERS
C/O Stantec Consulting
500 - 311 Portage Avenue
Winnipeg MB R3B 2B9

Date Received: 26-AUG-22
Report Date: 23-SEP-22 08:20 (MT)
Version: FINAL REV. 2

Client Phone: 204-924-5735

Certificate of Analysis

Lab Work Order #: L2730355

Project P.O. #: NOT SUBMITTED
Job Reference: ALAMOS
C of C Numbers:
Legal Site Desc:

Comments:
23-SEP-2022 Revised report - NO3 data

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2730355-1	L2730355-2	L2730355-3	L2730355-4	L2730355-5
	Description	W	W	W	W	W
	Sampled Date	23-AUG-22	23-AUG-22	23-AUG-22	23-AUG-22	23-AUG-22
	Sampled Time	09:56	10:35	11:10	09:15	11:47
	Client ID	AQM72	AQM73	AQM74	AQM71	AQM28
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	26.0	20.0	15.9	52.7	20.2
	Total Suspended Solids (mg/L)	20.7	2.5	160	1.9	1.1
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	19.9	17.3	15.8	45.5	11.5
	Ammonia, Total (as N) (mg/L)	0.091	0.064	0.019	0.017	0.023
	Bicarbonate (HCO3) (mg/L)	24.3	21.1	19.3	55.5	14.0
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	<0.10	<0.10	0.28	0.59	0.66
	Fluoride (F) (mg/L)	0.048	0.053	0.049	0.048	0.059
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	<0.0051	<0.0051	<0.0051	0.0252	<0.0051
	Nitrate (as N) (mg/L)	<0.0050 HTD	<0.0050 HTD	<0.0050 HTD	0.0252 HTD	<0.0050 HTD
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.87	0.58	0.47	0.40	0.26
	Phosphorus (P)-Total (mg/L)	0.0656	0.0426	0.0214	0.0163	0.0168
	Sulfate (SO4) (mg/L)	<0.30	<0.30	0.38	5.13	8.90
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	0.0013	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	30.6	28.0	13.6	20.4	12.4
	Total Organic Carbon (mg/L)	33.9	28.2	13.6	18.6	12.1
Inorganic Parameters	Acidity (as CaCO3) (mg/L)	15.8	11.3	6.4	5.4	2.1
Total Metals	Aluminum (Al)-Total (mg/L)	0.155	0.103	0.0489	0.0370	0.134
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00079	0.00068	0.00030	0.00040	0.00031
	Barium (Ba)-Total (mg/L)	0.0162	0.00704	0.00681	0.0106	0.00772
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.0000093	0.0000092	<0.0000050	<0.0000050	0.0000181
	Calcium (Ca)-Total (mg/L)	7.98	6.02	4.65	17.6	6.00
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00052	0.00030	0.00018	0.00021	0.00028
	Cobalt (Co)-Total (mg/L)	0.00145	0.00041	<0.00010	0.00012	0.00056
	Copper (Cu)-Total (mg/L)	0.00061	<0.00050	<0.00050	<0.00050	0.00486
	Iron (Fe)-Total (mg/L)	7.64	1.09	0.279	0.419	0.738

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2730355-6	L2730355-7	L2730355-8	L2730355-9	L2730355-10
Description	W	W	W	W	W
Sampled Date	23-AUG-22	23-AUG-22	23-AUG-22	23-AUG-22	23-AUG-22
Sampled Time	13:17	14:14	14:43	15:24	
Client ID	AQM29C	AQF41	AQF40	AQF46	QC-01
Grouping / **Analyte**					
WATER					
Physical Tests Hardness (as CaCO3) (mg/L)	9.59	9.48	9.75	27.0	21.4
Total Suspended Solids (mg/L)	2.0	1.2	1.1	<1.0	3.1
Anions and Nutrients Alkalinity, Total (as CaCO3) (mg/L)	8.8	10.0	10.1	28.0	15.7
Ammonia, Total (as N) (mg/L)	0.030	0.012	0.019	<0.010	0.041
Bicarbonate (HCO3) (mg/L)	10.7	12.2	12.3	34.2	19.2
Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
Chloride (Cl) (mg/L)	0.34	0.21	0.17	<0.10	<0.10
Fluoride (F) (mg/L)	0.057	0.064	0.065	0.046	0.055
Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
Nitrate and Nitrite as N (mg/L)	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
Nitrate (as N) (mg/L)	<0.0050 HTD	<0.0050 HTD	<0.0050 HTD	<0.0050 HTD	<0.0050 HTD
Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen (mg/L)	<0.20	0.21	0.23	0.39	0.72
Phosphorus (P)-Total (mg/L)	0.0174	0.0151	0.0154	0.0157	0.0412
Sulfate (SO4) (mg/L)	1.74	0.52	0.45	0.33	<0.30
Cyanides Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0011
Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	9.03	9.94	9.62	12.9	28.3
Total Organic Carbon (mg/L)	8.93	9.30	9.27	12.4	27.9
Inorganic Parameters Acidity (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	5.1	11.4
Total Metals Aluminum (Al)-Total (mg/L)	0.0446	0.0355	0.0340	0.0212	0.0947
Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total (mg/L)	0.00021	0.00020	0.00019	0.00032	0.00066
Barium (Ba)-Total (mg/L)	0.00519	0.00536	0.00523	0.00880	0.00720
Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Total (mg/L)	0.0000054	<0.0000050	<0.0000050	<0.0000050	0.0000097
Calcium (Ca)-Total (mg/L)	2.76	2.55	2.62	7.92	5.87
Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Total (mg/L)	0.00014	0.00027	0.00014	0.00014	0.00029
Cobalt (Co)-Total (mg/L)	0.00010	<0.00010	<0.00010	<0.00010	0.00041
Copper (Cu)-Total (mg/L)	0.00109	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Total (mg/L)	0.343	0.208	0.208	0.150	1.07

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2730355-11 W 23-AUG-22 16:25 FIELD BLANK	L2730355-12 W 24-AUG-22 09:21 AQF45	L2730355-13 W 24-AUG-22 10:41 AQF42	L2730355-14 W 24-AUG-22 12:32 AQF7S	L2730355-15 W 24-AUG-22 12:50 AQF7D
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	<0.20	11.1	9.82	16.0	15.7
	Total Suspended Solids (mg/L)	<1.0	1.9	<1.0	<1.0	1.3
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	11.3	10.1	15.6	15.7
	Ammonia, Total (as N) (mg/L)	0.033 RRV	0.041	0.043	0.052	0.023
	Bicarbonate (HCO3) (mg/L)	<1.2	13.8	12.3	19.0	19.2
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	<0.10	0.19	0.17	0.10	0.10
	Fluoride (F) (mg/L)	<0.020	0.066	0.064	0.045	0.039
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
	Nitrate (as N) (mg/L)	<0.0050 HTD	<0.0050 HTD	<0.0050 HTD	<0.0050 HTD	<0.0050 HTD
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.20	0.23	<0.20	0.25	<0.20
	Phosphorus (P)-Total (mg/L)	<0.0010	0.0175	0.0139	0.0080	0.0119
	Sulfate (SO4) (mg/L)	<0.30	0.54	0.47	0.62	0.75
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	0.56	10.9	10.7	9.94	8.83
	Total Organic Carbon (mg/L)	<0.50	9.31	9.34	9.13	8.64
Inorganic Parameters	Acidity (as CaCO3) (mg/L)	<2.0	2.6	<2.0	<2.0	4.6
Total Metals	Aluminum (Al)-Total (mg/L)	0.0056	0.112	0.0373	0.0207	0.0288
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	<0.00010	0.00023	0.00021	0.00024	0.00026
	Barium (Ba)-Total (mg/L)	0.00013	0.00653	0.00547	0.00637	0.00936
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	<0.050	3.19	2.84	4.19	4.06
	Cesium (Cs)-Total (mg/L)	<0.000010	0.000014	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00011	0.00074	0.00015	0.00015	0.00013
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	<0.010	0.305	0.217	0.035	0.149

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2730355-16	L2730355-17	L2730355-18	L2730355-19	
Description	W	W	W	W	
Sampled Date	24-AUG-22	24-AUG-22	24-AUG-22	24-AUG-22	
Sampled Time	13:38	14:58	15:22		
Client ID	AQF38	AQF43	AQF44	TRIP BLANK	
Grouping	**Analyte**				
WATER					
Physical Tests	Hardness (as CaCO3) (mg/L)	21.4	10.5	10.6	<0.20
	Total Suspended Solids (mg/L)	4.0	1.0	1.1	<1.0
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	21.9	11.1	11.0	<1.0
	Ammonia, Total (as N) (mg/L)	0.011	0.014	0.024	0.010
	Bicarbonate (HCO3) (mg/L)	26.7	13.5	13.4	<1.2
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	0.12	0.18	0.19	<0.10
	Fluoride (F) (mg/L)	0.087	0.066	0.066	<0.020
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	<0.0051	0.0086	<0.0051	<0.0051
	Nitrate (as N) (mg/L)	<0.0050 HTD	0.0086 HTD	<0.0050 HTD	<0.0050 HTD
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.43	0.20	0.26	<0.20
	Phosphorus (P)-Total (mg/L)	0.0191	0.0161	0.0151	<0.0010
	Sulfate (SO4) (mg/L)	<0.30	0.49	0.54	<0.30
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	13.5	11.2	10.4	<0.50
	Total Organic Carbon (mg/L)	11.9	9.27	9.23	<0.50
Inorganic Parameters	Acidity (as CaCO3) (mg/L)	2.1	<2.0	<2.0	<2.0
Total Metals	Aluminum (Al)-Total (mg/L)	0.0322	0.0472	0.0519	<0.0030
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00027	0.00023	0.00023	<0.00010
	Barium (Ba)-Total (mg/L)	0.0106	0.00547	0.00574	<0.00010
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	6.34	3.05	3.06	<0.050
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00014	0.00025	0.00024	0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.150	0.211	0.223	<0.010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2730355-1	L2730355-2	L2730355-3	L2730355-4	L2730355-5
Description	W	W	W	W	W
Sampled Date	23-AUG-22	23-AUG-22	23-AUG-22	23-AUG-22	23-AUG-22
Sampled Time	09:56	10:35	11:10	09:15	11:47
Client ID	AQM72	AQM73	AQM74	AQM71	AQM28
Grouping / **Analyte**					
WATER					
Total Metals Lead (Pb)-Total (mg/L)	<0.000050	0.000060	<0.000050	<0.000050	0.000060
Lithium (Li)-Total (mg/L)	<0.0010	0.0012	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total (mg/L)	1.64	1.11	1.04	1.81	1.31
Manganese (Mn)-Total (mg/L)	0.319	0.0922	0.0249	0.0492	0.0396
Molybdenum (Mo)-Total (mg/L)	0.000081	<0.000050	0.000240	<0.000050	0.000058
Nickel (Ni)-Total (mg/L)	0.00155	0.00083	<0.00050	0.00069	0.0607
Phosphorus (P)-Total (mg/L)	0.031	0.035	<0.030	<0.030	<0.030
Potassium (K)-Total (mg/L)	0.254	0.126	0.588	0.585	0.666
Rubidium (Rb)-Total (mg/L)	0.00059	<0.00020	0.00093	0.00094	0.00104
Selenium (Se)-Total (mg/L)	0.000089	0.000060	0.000055	0.000070	0.000058
Silicon (Si)-Total (mg/L)	4.19	3.71	1.03	3.98	2.22
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	1.36	1.62	1.38	1.91	1.66
Strontium (Sr)-Total (mg/L)	0.0265	0.0146	0.0124	0.0289	0.0190
Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	2.06	2.61
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	<0.00010	0.00021	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total (mg/L)	0.00480	0.00130	0.00077	0.00124	0.00114
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	0.000016	<0.000010	0.000013	0.000014	0.000026
Vanadium (V)-Total (mg/L)	0.00086	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	0.0091	0.0073	0.0055	0.0065	0.0148
Zirconium (Zr)-Total (mg/L)	0.00033	0.00042	<0.00020	<0.00020	<0.00020
Dissolved Metals Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.138	0.0931	0.0418	0.0287	0.104
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00072	0.00058	0.00021	0.00034	0.00023
Barium (Ba)-Dissolved (mg/L)	0.0156	0.00676	0.00587	0.00992	0.00708
Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved (mg/L)	0.0000086	0.0000078	<0.0000050	<0.0000050	0.0000165
Calcium (Ca)-Dissolved (mg/L)	7.90	6.10	4.59	18.0	5.85
Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved (mg/L)	0.00041	0.00025	0.00012	0.00016	0.00019

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2730355-6	L2730355-7	L2730355-8	L2730355-9	L2730355-10
Description	W	W	W	W	W
Sampled Date	23-AUG-22	23-AUG-22	23-AUG-22	23-AUG-22	23-AUG-22
Sampled Time	13:17	14:14	14:43	15:24	
Client ID	AQM29C	AQF41	AQF40	AQF46	QC-01
Grouping / **Analyte**					
WATER					
Total Metals Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000058
Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0011
Magnesium (Mg)-Total (mg/L)	0.720	0.739	0.758	1.63	1.04
Manganese (Mn)-Total (mg/L)	0.0154	0.0140	0.0141	0.0212	0.0897
Molybdenum (Mo)-Total (mg/L)	0.000066	0.000062	0.000063	0.000068	<0.000050
Nickel (Ni)-Total (mg/L)	0.00819	<0.00050	<0.00050	<0.00050	0.00083
Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	0.050
Potassium (K)-Total (mg/L)	0.543	0.482	0.485	0.482	0.122
Rubidium (Rb)-Total (mg/L)	0.00102	0.00109	0.00107	0.00082	<0.00020
Selenium (Se)-Total (mg/L)	0.000054	0.000051	<0.000050	<0.000050	0.000067
Silicon (Si)-Total (mg/L)	2.45	2.07	2.07	0.94	3.49
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	1.28	1.22	1.19	1.10	1.23
Strontium (Sr)-Total (mg/L)	0.0123	0.0121	0.0118	0.0151	0.0145
Sulfur (S)-Total (mg/L)	0.52	<0.50	<0.50	<0.50	<0.50
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	0.00011	<0.00010	<0.00010	<0.00010	0.00092
Titanium (Ti)-Total (mg/L)	0.00102	0.00080	0.00089	0.00043	0.00118
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	0.000023	0.000020	0.000021	<0.000010	<0.000010
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	0.0057	0.0053	0.0044	0.0044	0.0094
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.0255	0.0232	0.0204	0.0185	0.0982
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00017	0.00016	0.00017	0.00030	0.00060
Barium (Ba)-Dissolved (mg/L)	0.00448	0.00474	0.00470	0.00737	0.00719
Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000065
Calcium (Ca)-Dissolved (mg/L)	2.63	2.54	2.62	7.93	6.59
Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00012	0.00012	<0.00010	0.00026

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2730355-11 W 23-AUG-22 16:25 FIELD BLANK	L2730355-12 W 24-AUG-22 09:21 AQF45	L2730355-13 W 24-AUG-22 10:41 AQF42	L2730355-14 W 24-AUG-22 12:32 AQF7S	L2730355-15 W 24-AUG-22 12:50 AQF7D
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	0.000066	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010	0.0012	0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	<0.0050	0.980	0.841	1.48	1.44
	Manganese (Mn)-Total (mg/L)	0.00025	0.0317	0.0165	0.00993	0.0525
	Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000092	0.000072	0.000075	<0.000050
	Nickel (Ni)-Total (mg/L)	<0.00050	0.00087	<0.00050	0.00058	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Total (mg/L)	<0.050	0.539	0.513	0.540	0.519
	Rubidium (Rb)-Total (mg/L)	<0.00020	0.00130	0.00109	0.00105	0.00100
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	0.000051	0.000065	<0.000050
	Silicon (Si)-Total (mg/L)	<0.10	2.49	2.33	0.85	1.10
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	<0.050	1.14	1.07	1.06	1.03
	Strontium (Sr)-Total (mg/L)	<0.00020	0.0138	0.0130	0.0131	0.0129
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00466
	Titanium (Ti)-Total (mg/L)	<0.00030	0.00438	0.00099	0.00031	<0.00030
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	<0.000010	0.000037	0.000026	<0.000010	<0.000010
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	0.0039	<0.0030	0.0032	0.0032
	Zirconium (Zr)-Total (mg/L)	<0.00020	0.00024	<0.00020	<0.00020	<0.00020
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0378	0.0216	0.0127	0.0225
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00016	0.00016	0.00018	0.00018
	Barium (Ba)-Dissolved (mg/L)	<0.00010	0.00518	0.00504	0.00580	0.00848
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	<0.050	2.99	2.66	4.14	4.09
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00014	0.00011	<0.00010	<0.00010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2730355-16	L2730355-17	L2730355-18	L2730355-19	
Description	W	W	W	W	
Sampled Date	24-AUG-22	24-AUG-22	24-AUG-22	24-AUG-22	
Sampled Time	13:38	14:58	15:22		
Client ID	AQF38	AQF43	AQF44	TRIP BLANK	
Grouping	**Analyte**				
WATER					
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Total (mg/L)	<0.0010	0.0010	0.0011	<0.0010	
	Magnesium (Mg)-Total (mg/L)	1.56	0.886	0.895	<0.0050	
	Manganese (Mn)-Total (mg/L)	0.0788	0.0206	0.0209	0.00017	
	Molybdenum (Mo)-Total (mg/L)	0.00224	0.000102	0.000093	<0.000050	
	Nickel (Ni)-Total (mg/L)	<0.00050	0.00067	<0.00050	0.00057	
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	
	Potassium (K)-Total (mg/L)	0.594	0.526	0.517	<0.050	
	Rubidium (Rb)-Total (mg/L)	0.00093	0.00109	0.00120	<0.00020	
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	0.000079	<0.000050	
	Silicon (Si)-Total (mg/L)	1.08	2.28	2.27	<0.10	
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Total (mg/L)	1.13	1.10	1.09	<0.050	
	Strontium (Sr)-Total (mg/L)	0.0170	0.0134	0.0134	<0.00020	
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	<0.50	
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	0.00129	0.00148	0.00154	<0.00030	
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Uranium (U)-Total (mg/L)	0.000013	0.000025	0.000027	<0.000010	
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Total (mg/L)	<0.0030	0.0049	0.0049	<0.0030	
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0083	0.0230	0.0218	<0.0010	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00014	0.00015	0.00015	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.00857	0.00471	0.00479	0.00021	
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Calcium (Ca)-Dissolved (mg/L)	6.21	2.88	2.91	<0.050	
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00012	<0.00010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2730355-1	L2730355-2	L2730355-3	L2730355-4	L2730355-5
	Description	W	W	W	W	W
	Sampled Date	23-AUG-22	23-AUG-22	23-AUG-22	23-AUG-22	23-AUG-22
	Sampled Time	09:56	10:35	11:10	09:15	11:47
	Client ID	AQM72	AQM73	AQM74	AQM71	AQM28
Grouping	**Analyte**					
WATER						
Dissolved Metals	Cobalt (Co)-Dissolved (mg/L)	0.00142	0.00042	<0.00010	0.00012	0.00031
	Copper (Cu)-Dissolved (mg/L)	0.00041	0.00033	0.00047	0.00188 RRV	0.00418
	Iron (Fe)-Dissolved (mg/L)	7.45	0.926	0.207	0.334	0.621
	Lead (Pb)-Dissolved (mg/L)	0.000053	0.000065	<0.000050	0.000123	0.000089
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0013	<0.0010	0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	1.52	1.16	1.09	1.91	1.35
	Manganese (Mn)-Dissolved (mg/L)	0.316	0.0927	0.0240	0.0490	0.0286
	Molybdenum (Mo)-Dissolved (mg/L)	0.000089	<0.000050	0.000311	0.000061	0.000072
	Nickel (Ni)-Dissolved (mg/L)	0.00126	0.00066	<0.00050	0.00054	0.0595
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.250	0.113	0.564	0.560	0.685
	Rubidium (Rb)-Dissolved (mg/L)	0.00050	<0.00020	0.00081	0.00093	0.00099
	Selenium (Se)-Dissolved (mg/L)	0.000082	0.000055	<0.000050	<0.000050	0.000079
	Silicon (Si)-Dissolved (mg/L)	4.37	3.86	1.04	3.97	2.19
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.795	1.17	1.00	1.55	1.29
	Strontium (Sr)-Dissolved (mg/L)	0.0293	0.0162	0.0134	0.0322	0.0197
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	2.14	3.15
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00036	<0.00010	<0.00010	0.00044 RRV
	Titanium (Ti)-Dissolved (mg/L)	0.00396	0.00094	0.00048	0.00074	0.00060
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.000018	<0.000010	0.000013	0.000016	0.000028
	Vanadium (V)-Dissolved (mg/L)	0.00068	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0031	0.0036	0.0010	0.0030	0.0094
	Zirconium (Zr)-Dissolved (mg/L)	0.00038	0.00022	<0.00020	0.00020	<0.00020
Speciated Metals	Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2730355-6 W 23-AUG-22 13:17 AQM29C	L2730355-7 W 23-AUG-22 14:14 AQF41	L2730355-8 W 23-AUG-22 14:43 AQF40	L2730355-9 W 23-AUG-22 15:24 AQF46	L2730355-10 W 23-AUG-22 QC-01
WATER						
Dissolved Metals	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00044
	Copper (Cu)-Dissolved (mg/L)	0.00085	0.00028	0.00030	0.00029	0.00058
	Iron (Fe)-Dissolved (mg/L)	0.227	0.153	0.148	0.077	0.957
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000057
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0014
	Magnesium (Mg)-Dissolved (mg/L)	0.733	0.762	0.778	1.75	1.20
	Manganese (Mn)-Dissolved (mg/L)	0.00959	0.00552	0.00511	0.0174	0.0923
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000076	0.000093	0.000060	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00772	<0.00050	<0.00050	<0.00050	0.00066
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.527	0.468	0.503	0.481	0.127
	Rubidium (Rb)-Dissolved (mg/L)	0.00104	0.00106	0.00099	0.00075	<0.00020
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	0.000052	<0.000050	0.000077
	Silicon (Si)-Dissolved (mg/L)	2.45	2.10	2.05	0.934	3.84
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.971	0.958	1.04	0.928	1.11
	Strontium (Sr)-Dissolved (mg/L)	0.0131	0.0125	0.0132	0.0166	0.0156
	Sulfur (S)-Dissolved (mg/L)	0.82	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	0.00041 RRV	0.00047 RRV	0.00024	0.00055 RRV	0.00045
	Titanium (Ti)-Dissolved (mg/L)	0.00041	0.00039	0.00037	<0.00030	0.00110
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.000023	0.000024	0.000023	<0.000010	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0014	0.0018	0.0033	0.0017	0.0036
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	0.00026	<0.00020	<0.00020	0.00021
Speciated Metals	Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2730355-11	L2730355-12	L2730355-13	L2730355-14	L2730355-15
Description	W	W	W	W	W
Sampled Date	23-AUG-22	24-AUG-22	24-AUG-22	24-AUG-22	24-AUG-22
Sampled Time	16:25	09:21	10:41	12:32	12:50
Client ID	FIELD BLANK	AQF45	AQF42	AQF7S	AQF7D
Grouping / **Analyte**					
WATER					
Dissolved Metals Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00068	0.00042	0.00030	0.00030
Iron (Fe)-Dissolved (mg/L)	<0.010	0.153	0.145	0.015	0.098
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000121	0.000099	0.000112
Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved (mg/L)	<0.0050	0.887	0.771	1.38	1.33
Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.0119	0.00551	0.00052	0.0252
Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000115	0.000096	0.000118	0.000083
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
Potassium (K)-Dissolved (mg/L)	<0.050	0.496	0.488	0.547	0.504
Rubidium (Rb)-Dissolved (mg/L)	<0.00020	0.00116	0.00108	0.00093	0.00094
Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	0.000062	<0.000050
Silicon (Si)-Dissolved (mg/L)	<0.050	2.06	2.02	0.762	0.992
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	<0.050	0.990	0.963	0.951	0.894
Strontium (Sr)-Dissolved (mg/L)	<0.00010	0.0129	0.0119	0.0124	0.0119
Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00010	0.00137
Titanium (Ti)-Dissolved (mg/L)	<0.00030	0.00119	0.00046	<0.00030	<0.00030
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved (mg/L)	<0.000010	0.000028	0.000021	<0.000010	<0.000010
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0012	0.0030	0.0026	0.0047
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2730355-16	L2730355-17	L2730355-18	L2730355-19	
Description	W	W	W	W	
Sampled Date	24-AUG-22	24-AUG-22	24-AUG-22	24-AUG-22	
Sampled Time	13:38	14:58	15:22		
Client ID	AQF38	AQF43	AQF44	TRIP BLANK	
Grouping	**Analyte**				
WATER					
Dissolved Metals	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00024	0.00033	0.00029	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.012	0.135	0.133	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000124	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	1.44	0.804	0.822	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.00099	0.00578	0.00604	<0.00010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00222	0.000098	0.000147	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.560	0.548	0.544	<0.050
	Rubidium (Rb)-Dissolved (mg/L)	0.00084	0.00100	0.00099	<0.00020
	Selenium (Se)-Dissolved (mg/L)	0.000056	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	0.928	2.02	2.05	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.988	0.986	0.989	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.0163	0.0121	0.0123	<0.00010
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	0.00058	0.00045	<0.00030
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.000022	0.000022	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0026	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals	Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Total Suspended Solids	DUP-H	L2730355-1, -2, -3, -4
Matrix Spike	Dissolved Organic Carbon	MS-B	L2730355-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Dissolved Organic Carbon	MS-B	L2730355-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2730355-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2730355-10, -11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2730355-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2730355-10, -11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2730355-10, -11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2730355-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2730355-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2730355-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L2730355-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Total	MS-B	L2730355-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2730355-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Copper (Cu)-Total	MS-B	L2730355-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Lithium (Li)-Total	MS-B	L2730355-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2730355-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Total	MS-B	L2730355-11, -12, -13, -14, -15, -16, -17, -18, -19
Matrix Spike	Potassium (K)-Total	MS-B	L2730355-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L2730355-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2730355-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Total	MS-B	L2730355-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Total	MS-B	L2730355-1, -10, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-WT	Water	Acidity (as CaCO3)	APHA 2310 B - Potentiometric Titration
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BR-IC-N-WP	Water	Bromide in Water by IC	EPA 300.1 (mod)

Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

C-TOC-HTC-WP	Water	Total Organic Carbon by Combustion	APHA 5310 B-WP

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-L-CFA-WT	Water	Low Level Free Cyanide in water by CFA	ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-WT	Water	Low Level Total Cyanide in water by CFA	ISO 14403-2:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, however it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-WT	Water	Low level WAD Cyanide in water by CFA	APHA 4500CN I-Weak acid Dist Colorimet

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

CR-CR6-PWQO-IC-WT	Water	Chromium +6	EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-D-CCMS-WP	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Reference Information

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-TOTKJ-WP	Water	Total Kjeldahl Nitrogen	APHA 4500 NorgD (modified)

Aqueous samples are digested in a block digester with sulfuric acid and copper sulfate as a catalyst. Total Kjeldahl Nitrogen is then analyzed using a discrete analyzer with colorimetric detection.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-L-IC-N-WP	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

P-T-L-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-LR-WP	Water	Total Suspended Solids	APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 Œ 105°C.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Alamos Gold Inc.
C/O Stantec Consulting 500 - 311 Portage Avenue
Winnipeg MB R3B 2B9
Contact: KAREN MATHERS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-WT	**Water**							
Batch R5853821								
WG3760625-2 LCS								
Acidity (as CaCO3)			109.0		%		85-115	31-AUG-22
WG3760625-1 MB								
Acidity (as CaCO3)			<2.0		mg/L		3	31-AUG-22
Batch R5853822								
WG3760626-2 LCS								
Acidity (as CaCO3)			106.4		%		85-115	31-AUG-22
WG3760626-1 MB								
Acidity (as CaCO3)			<2.0		mg/L		3	31-AUG-22
ALK-TITR-WP	**Water**							
Batch R5856021								
WG3761724-15 DUP		**L2730355-14**						
Alkalinity, Total (as CaCO3)		15.6	15.9		mg/L	1.9	20	06-SEP-22
WG3761724-14 LCS								
Alkalinity, Total (as CaCO3)			100.4		%		85-115	06-SEP-22
WG3761724-9 LCS								
Alkalinity, Total (as CaCO3)			100.3		%		85-115	06-SEP-22
WG3761724-11 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-SEP-22
WG3761724-6 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-SEP-22
Batch R5858318								
WG3762342-4 LCS								
Alkalinity, Total (as CaCO3)			100.1		%		85-115	09-SEP-22
WG3762342-1 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	09-SEP-22
Batch R5862178								
WG3763404-4 LCS								
Alkalinity, Total (as CaCO3)			99.9		%		85-115	14-SEP-22
WG3763404-1 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-SEP-22
BR-IC-N-WP	**Water**							
Batch R5863438								
WG3762087-2 LCS								
Bromide (Br)			99.0		%		85-115	09-SEP-22
WG3762087-6 LCS								
Bromide (Br)			98.8		%		85-115	09-SEP-22
WG3762087-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BR-IC-N-WP	**Water**							
Batch R5863438								
WG3762087-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	09-SEP-22
WG3762087-5 MB								
Bromide (Br)			<0.10		mg/L		0.1	09-SEP-22
C-DOC-HTC-WP	**Water**							
Batch R5853061								
WG3760918-7 DUP		**L2730355-16**						
Dissolved Organic Carbon		13.5	14.0		mg/L	4.1	20	02-SEP-22
WG3760918-2 LCS								
Dissolved Organic Carbon			105.8		%		80-120	02-SEP-22
WG3760918-6 LCS								
Dissolved Organic Carbon			104.6		%		80-120	02-SEP-22
WG3760918-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-SEP-22
WG3760918-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-SEP-22
WG3760918-8 MS		**L2730355-17**						
Dissolved Organic Carbon			N/A	MS-B	%		-	02-SEP-22
Batch R5854339								
WG3761283-10 LCS								
Dissolved Organic Carbon			102.8		%		80-120	04-SEP-22
WG3761283-9 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-SEP-22
Batch R5854354								
WG3761308-2 LCS								
Dissolved Organic Carbon			103.2		%		80-120	03-SEP-22
WG3761308-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-SEP-22
C-TOC-HTC-WP	**Water**							
Batch R5853062								
WG3760923-7 DUP		**L2730355-16**						
Total Organic Carbon		11.9	11.4		mg/L	4.4	20	02-SEP-22
WG3760923-10 LCS								
Total Organic Carbon			102.8		%		80-120	02-SEP-22
WG3760923-6 LCS								
Total Organic Carbon			103.9		%		80-120	02-SEP-22
WG3760923-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	02-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	**Water**							
Batch R5853062								
WG3760923-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	02-SEP-22
WG3760923-8 MS		**L2730355-17**						
Total Organic Carbon			88.6		%		70-130	02-SEP-22
Batch R5854342								
WG3761292-10 LCS								
Total Organic Carbon			102.6		%		80-120	04-SEP-22
WG3761292-9 MB								
Total Organic Carbon			<0.50		mg/L		0.5	04-SEP-22
CL-L-IC-N-WP	**Water**							
Batch R5856696								
WG3760513-11 DUP		**L2730355-5**						
Chloride (Cl)		0.66	0.66		mg/L	0.1	20	31-AUG-22
WG3760513-10 LCS								
Chloride (Cl)			97.7		%		90-110	31-AUG-22
WG3760513-6 LCS								
Chloride (Cl)			97.3		%		90-110	31-AUG-22
WG3760513-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	31-AUG-22
WG3760513-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	31-AUG-22
WG3760513-12 MS		**L2730355-5**						
Chloride (Cl)			104.0		%		75-125	31-AUG-22
CN-FREE-L-CFA-WT	**Water**							
Batch R5853280								
WG3760775-2 LCS								
Cyanide, Free			105.7		%		80-120	01-SEP-22
WG3760775-7 LCS								
Cyanide, Free			104.3		%		80-120	01-SEP-22
WG3760775-1 MB								
Cyanide, Free			<0.0010		mg/L		0.001	01-SEP-22
WG3760775-6 MB								
Cyanide, Free			<0.0010		mg/L		0.001	01-SEP-22
CN-T-L-CFA-WT	**Water**							
Batch R5853280								
WG3760775-2 LCS								
Cyanide, Total			98.9		%		80-120	01-SEP-22
WG3760775-7 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-T-L-CFA-WT	**Water**							
Batch R5853280								
WG3760775-7 LCS								
Cyanide, Total			98.9		%		80-120	01-SEP-22
WG3760775-1 MB								
Cyanide, Total			<0.0010		mg/L		0.001	01-SEP-22
WG3760775-6 MB								
Cyanide, Total			<0.0010		mg/L		0.001	01-SEP-22
CN-WAD-L-CFA-WT	**Water**							
Batch R5853280								
WG3760775-2 LCS								
Cyanide, Weak Acid Diss			115.4		%		80-120	01-SEP-22
WG3760775-7 LCS								
Cyanide, Weak Acid Diss			114.0		%		80-120	01-SEP-22
WG3760775-1 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	01-SEP-22
WG3760775-6 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	01-SEP-22
CR-CR6-PWQO-IC-WT	**Water**							
Batch R5853365								
WG3760729-2 LCS								
Chromium, Hexavalent			99.4		%		80-120	01-SEP-22
WG3760729-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	01-SEP-22
Batch R5853368								
WG3760730-2 LCS								
Chromium, Hexavalent			97.6		%		80-120	01-SEP-22
WG3760730-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	01-SEP-22
F-IC-N-WP	**Water**							
Batch R5856696								
WG3760513-11 DUP		**L2730355-5**						
Fluoride (F)		0.059	0.059		mg/L	0.3	20	31-AUG-22
WG3760513-10 LCS								
Fluoride (F)			102.8		%		90-110	31-AUG-22
WG3760513-6 LCS								
Fluoride (F)			102.4		%		90-110	31-AUG-22
WG3760513-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	31-AUG-22
WG3760513-9 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP	**Water**							
Batch R5856696								
WG3760513-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	31-AUG-22
WG3760513-12 MS		**L2730355-5**						
Fluoride (F)			109.5		%		75-125	31-AUG-22
MET-D-CCMS-WP	**Water**							
Batch R5853517								
WG3760664-2 LCS								
Aluminum (Al)-Dissolved			100.0		%		80-120	01-SEP-22
Antimony (Sb)-Dissolved			103.2		%		80-120	01-SEP-22
Arsenic (As)-Dissolved			99.1		%		80-120	01-SEP-22
Barium (Ba)-Dissolved			97.7		%		80-120	01-SEP-22
Beryllium (Be)-Dissolved			93.7		%		80-120	01-SEP-22
Bismuth (Bi)-Dissolved			102.0		%		80-120	01-SEP-22
Boron (B)-Dissolved			92.9		%		80-120	01-SEP-22
Cadmium (Cd)-Dissolved			101.2		%		80-120	01-SEP-22
Calcium (Ca)-Dissolved			94.5		%		80-120	01-SEP-22
Cesium (Cs)-Dissolved			104.3		%		80-120	01-SEP-22
Chromium (Cr)-Dissolved			100.0		%		80-120	01-SEP-22
Cobalt (Co)-Dissolved			98.9		%		80-120	01-SEP-22
Copper (Cu)-Dissolved			101.1		%		80-120	01-SEP-22
Iron (Fe)-Dissolved			94.7		%		80-120	01-SEP-22
Lead (Pb)-Dissolved			99.0		%		80-120	01-SEP-22
Lithium (Li)-Dissolved			88.7		%		80-120	01-SEP-22
Magnesium (Mg)-Dissolved			100.5		%		80-120	01-SEP-22
Manganese (Mn)-Dissolved			99.6		%		80-120	01-SEP-22
Molybdenum (Mo)-Dissolved			101.4		%		80-120	01-SEP-22
Nickel (Ni)-Dissolved			98.8		%		80-120	01-SEP-22
Phosphorus (P)-Dissolved			97.6		%		80-120	01-SEP-22
Potassium (K)-Dissolved			99.0		%		80-120	01-SEP-22
Rubidium (Rb)-Dissolved			98.2		%		80-120	01-SEP-22
Selenium (Se)-Dissolved			102.1		%		80-120	01-SEP-22
Silicon (Si)-Dissolved			101.4		%		80-120	01-SEP-22
Silver (Ag)-Dissolved			99.9		%		80-120	01-SEP-22
Sodium (Na)-Dissolved			98.9		%		80-120	01-SEP-22
Strontium (Sr)-Dissolved			102.3		%		80-120	01-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5853517								
WG3760664-2 LCS								
Sulfur (S)-Dissolved			103.3		%		80-120	01-SEP-22
Tellurium (Te)-Dissolved			102.8		%		80-120	01-SEP-22
Thallium (Tl)-Dissolved			97.0		%		80-120	01-SEP-22
Thorium (Th)-Dissolved			95.6		%		80-120	01-SEP-22
Tin (Sn)-Dissolved			101.1		%		80-120	01-SEP-22
Titanium (Ti)-Dissolved			95.7		%		80-120	01-SEP-22
Tungsten (W)-Dissolved			98.8		%		80-120	01-SEP-22
Uranium (U)-Dissolved			99.9		%		80-120	01-SEP-22
Vanadium (V)-Dissolved			100.4		%		80-120	01-SEP-22
Zinc (Zn)-Dissolved			100.1		%		80-120	01-SEP-22
Zirconium (Zr)-Dissolved			95.7		%		80-120	01-SEP-22
WG3760664-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	01-SEP-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	01-SEP-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5853517								
WG3760664-1 MB								
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	01-SEP-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-22
Batch R5854036								
WG3760978-4 DUP		**L2730355-10**						
Aluminum (Al)-Dissolved		0.0982	0.0969		mg/L	1.3	20	02-SEP-22
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-SEP-22
Arsenic (As)-Dissolved		0.00060	0.00058		mg/L	2.6	20	02-SEP-22
Barium (Ba)-Dissolved		0.00719	0.00721		mg/L	0.2	20	02-SEP-22
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-SEP-22
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-SEP-22
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-SEP-22
Cadmium (Cd)-Dissolved		0.0000065	0.0000081	J	mg/L	0.000001	0.00001	02-SEP-22
Calcium (Ca)-Dissolved		6.59	6.77		mg/L	2.7	20	02-SEP-22
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-SEP-22
Chromium (Cr)-Dissolved		0.00026	0.00025		mg/L	2.1	20	02-SEP-22
Cobalt (Co)-Dissolved		0.00044	0.00042		mg/L	3.8	20	02-SEP-22
Copper (Cu)-Dissolved		0.00058	<0.00020	G	mg/L	N/A	20	02-SEP-22
Iron (Fe)-Dissolved		0.957	0.968		mg/L	1.1	20	02-SEP-22
Lead (Pb)-Dissolved		0.000057	0.000060		mg/L	4.5	20	02-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5854036								
WG3760978-4 DUP		**L2730355-10**						
Lithium (Li)-Dissolved		0.0014	0.0014		mg/L	2.4	20	02-SEP-22
Magnesium (Mg)-Dissolved		1.20	1.17		mg/L	2.1	20	02-SEP-22
Manganese (Mn)-Dissolved		0.0923	0.0917		mg/L	0.7	20	02-SEP-22
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-SEP-22
Nickel (Ni)-Dissolved		0.00066	0.00063		mg/L	5.0	20	02-SEP-22
Phosphorus (P)-Dissolved		<0.030	<0.030	RPD-NA	mg/L	N/A	20	02-SEP-22
Potassium (K)-Dissolved		0.127	0.122		mg/L	4.2	20	02-SEP-22
Rubidium (Rb)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	02-SEP-22
Selenium (Se)-Dissolved		0.000077	0.000064		mg/L	17	20	02-SEP-22
Silicon (Si)-Dissolved		3.84	3.80		mg/L	1.1	20	02-SEP-22
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-SEP-22
Sodium (Na)-Dissolved		1.11	1.09		mg/L	1.2	20	02-SEP-22
Strontium (Sr)-Dissolved		0.0156	0.0156		mg/L	0.2	20	02-SEP-22
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	02-SEP-22
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	02-SEP-22
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-SEP-22
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-SEP-22
Tin (Sn)-Dissolved		0.00045	0.00043		mg/L	4.7	20	02-SEP-22
Titanium (Ti)-Dissolved		0.00110	0.00102		mg/L	7.6	20	02-SEP-22
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-SEP-22
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-SEP-22
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-SEP-22
Zinc (Zn)-Dissolved		0.0036	0.0032		mg/L	11	20	02-SEP-22
Zirconium (Zr)-Dissolved		0.00021	0.00020		mg/L	0.9	20	02-SEP-22
WG3760978-2 LCS								
Aluminum (Al)-Dissolved			99.1		%		80-120	02-SEP-22
Antimony (Sb)-Dissolved			104.8		%		80-120	02-SEP-22
Arsenic (As)-Dissolved			99.0		%		80-120	02-SEP-22
Barium (Ba)-Dissolved			101.9		%		80-120	02-SEP-22
Beryllium (Be)-Dissolved			102.0		%		80-120	02-SEP-22
Bismuth (Bi)-Dissolved			99.96		%		80-120	02-SEP-22
Boron (B)-Dissolved			101.0		%		80-120	02-SEP-22
Cadmium (Cd)-Dissolved			98.4		%		80-120	02-SEP-22
Calcium (Ca)-Dissolved			101.6		%		80-120	02-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5854036								
WG3760978-2 LCS								
Cesium (Cs)-Dissolved			101.2		%		80-120	02-SEP-22
Chromium (Cr)-Dissolved			98.4		%		80-120	02-SEP-22
Cobalt (Co)-Dissolved			98.7		%		80-120	02-SEP-22
Copper (Cu)-Dissolved			98.4		%		80-120	02-SEP-22
Iron (Fe)-Dissolved			94.1		%		80-120	02-SEP-22
Lead (Pb)-Dissolved			93.3		%		80-120	02-SEP-22
Lithium (Li)-Dissolved			98.1		%		80-120	02-SEP-22
Magnesium (Mg)-Dissolved			98.2		%		80-120	02-SEP-22
Manganese (Mn)-Dissolved			98.8		%		80-120	02-SEP-22
Molybdenum (Mo)-Dissolved			106.7		%		80-120	02-SEP-22
Nickel (Ni)-Dissolved			96.7		%		80-120	02-SEP-22
Phosphorus (P)-Dissolved			105.2		%		80-120	02-SEP-22
Potassium (K)-Dissolved			98.6		%		80-120	02-SEP-22
Rubidium (Rb)-Dissolved			98.3		%		80-120	02-SEP-22
Selenium (Se)-Dissolved			98.8		%		80-120	02-SEP-22
Silicon (Si)-Dissolved			99.0		%		80-120	02-SEP-22
Silver (Ag)-Dissolved			101.2		%		80-120	02-SEP-22
Sodium (Na)-Dissolved			102.0		%		80-120	02-SEP-22
Strontium (Sr)-Dissolved			101.1		%		80-120	02-SEP-22
Sulfur (S)-Dissolved			90.6		%		80-120	02-SEP-22
Tellurium (Te)-Dissolved			103.8		%		80-120	02-SEP-22
Thallium (Tl)-Dissolved			97.1		%		80-120	02-SEP-22
Thorium (Th)-Dissolved			97.6		%		80-120	02-SEP-22
Tin (Sn)-Dissolved			98.8		%		80-120	02-SEP-22
Titanium (Ti)-Dissolved			96.3		%		80-120	02-SEP-22
Tungsten (W)-Dissolved			94.1		%		80-120	02-SEP-22
Uranium (U)-Dissolved			98.7		%		80-120	02-SEP-22
Vanadium (V)-Dissolved			99.2		%		80-120	02-SEP-22
Zinc (Zn)-Dissolved			95.7		%		80-120	02-SEP-22
Zirconium (Zr)-Dissolved			98.8		%		80-120	02-SEP-22
WG3760978-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-SEP-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-SEP-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5854036								
WG3760978-1 MB								
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-SEP-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	02-SEP-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-SEP-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-SEP-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	02-SEP-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-SEP-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	02-SEP-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-SEP-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-SEP-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-SEP-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-SEP-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-SEP-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-SEP-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-SEP-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-SEP-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-SEP-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-SEP-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	02-SEP-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-SEP-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	02-SEP-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-SEP-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-SEP-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-SEP-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-SEP-22
Strontium (Sr)-Dissolved			0.00010		mg/L		0.0001	02-SEP-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	02-SEP-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	02-SEP-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-SEP-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	02-SEP-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-SEP-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-SEP-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	02-SEP-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-SEP-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5854036								
WG3760978-1 MB								
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-SEP-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	02-SEP-22
WG3760978-5 MS		**L2730355-10**						
Aluminum (Al)-Dissolved			89.4		%		70-130	02-SEP-22
Antimony (Sb)-Dissolved			110.5		%		70-130	02-SEP-22
Arsenic (As)-Dissolved			96.1		%		70-130	02-SEP-22
Barium (Ba)-Dissolved			100.2		%		70-130	02-SEP-22
Beryllium (Be)-Dissolved			98.7		%		70-130	02-SEP-22
Bismuth (Bi)-Dissolved			93.4		%		70-130	02-SEP-22
Boron (B)-Dissolved			107.0		%		70-130	02-SEP-22
Cadmium (Cd)-Dissolved			96.1		%		70-130	02-SEP-22
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	02-SEP-22
Cesium (Cs)-Dissolved			97.4		%		70-130	02-SEP-22
Chromium (Cr)-Dissolved			96.4		%		70-130	02-SEP-22
Cobalt (Co)-Dissolved			93.4		%		70-130	02-SEP-22
Copper (Cu)-Dissolved			91.7		%		70-130	02-SEP-22
Iron (Fe)-Dissolved			92.2		%		70-130	02-SEP-22
Lead (Pb)-Dissolved			91.3		%		70-130	02-SEP-22
Lithium (Li)-Dissolved			94.8		%		70-130	02-SEP-22
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	02-SEP-22
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	02-SEP-22
Molybdenum (Mo)-Dissolved			116.3		%		70-130	02-SEP-22
Nickel (Ni)-Dissolved			94.1		%		70-130	02-SEP-22
Phosphorus (P)-Dissolved			94.4		%		70-130	02-SEP-22
Potassium (K)-Dissolved			89.4		%		70-130	02-SEP-22
Rubidium (Rb)-Dissolved			92.1		%		70-130	02-SEP-22
Selenium (Se)-Dissolved			97.6		%		70-130	02-SEP-22
Silicon (Si)-Dissolved			98.9		%		70-130	02-SEP-22
Silver (Ag)-Dissolved			99.5		%		70-130	02-SEP-22
Sodium (Na)-Dissolved			91.9		%		70-130	02-SEP-22
Strontium (Sr)-Dissolved			105.1		%		70-130	02-SEP-22
Sulfur (S)-Dissolved			92.4		%		70-130	02-SEP-22
Tellurium (Te)-Dissolved			114.8		%		70-130	02-SEP-22
Thallium (Tl)-Dissolved			89.6		%		70-130	02-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5854036								
WG3760978-5 MS		**L2730355-10**						
Thorium (Th)-Dissolved			99.2		%		70-130	02-SEP-22
Tin (Sn)-Dissolved			105.3		%		70-130	02-SEP-22
Titanium (Ti)-Dissolved			103.8		%		70-130	02-SEP-22
Tungsten (W)-Dissolved			102.1		%		70-130	02-SEP-22
Uranium (U)-Dissolved			95.9		%		70-130	02-SEP-22
Vanadium (V)-Dissolved			95.8		%		70-130	02-SEP-22
Zinc (Zn)-Dissolved			94.1		%		70-130	02-SEP-22
Zirconium (Zr)-Dissolved			113.6		%		70-130	02-SEP-22
MET-T-CCMS-WP	**Water**							
Batch R5852456								
WG3760366-4 DUP		**L2730355-12**						
Aluminum (Al)-Total		0.112	0.107		mg/L	4.4	20	31-AUG-22
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-AUG-22
Arsenic (As)-Total		0.00023	0.00022		mg/L	1.8	20	31-AUG-22
Barium (Ba)-Total		0.00653	0.00650		mg/L	0.5	20	31-AUG-22
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-AUG-22
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	31-AUG-22
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	31-AUG-22
Cadmium (Cd)-Total		<0.0000050	0.0000058	RPD-NA	mg/L	N/A	20	31-AUG-22
Calcium (Ca)-Total		3.19	3.15		mg/L	1.5	20	31-AUG-22
Cesium (Cs)-Total		0.000014	0.000011	J	mg/L	0.000003	0.00002	31-AUG-22
Chromium (Cr)-Total		0.00074	0.00026	J,G	mg/L	0.00048	0.0002	31-AUG-22
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-AUG-22
Copper (Cu)-Total		<0.00050	0.00052	RPD-NA	mg/L	N/A	20	31-AUG-22
Iron (Fe)-Total		0.305	0.296		mg/L	3.0	20	31-AUG-22
Lead (Pb)-Total		0.000066	0.000064		mg/L	3.3	20	31-AUG-22
Lithium (Li)-Total		0.0012	0.0011		mg/L	3.9	20	31-AUG-22
Magnesium (Mg)-Total		0.980	0.962		mg/L	1.9	20	31-AUG-22
Manganese (Mn)-Total		0.0317	0.0312		mg/L	1.6	20	31-AUG-22
Molybdenum (Mo)-Total		0.000092	0.000108		mg/L	16	20	31-AUG-22
Nickel (Ni)-Total		0.00087	0.00067	J	mg/L	0.00020	0.001	31-AUG-22
Potassium (K)-Total		0.539	0.525		mg/L	2.6	20	31-AUG-22
Phosphorus (P)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	31-AUG-22
Rubidium (Rb)-Total		0.00130	0.00129		mg/L	1.1	20	31-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5852456								
WG3760366-4 DUP		**L2730355-12**						
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	31-AUG-22
Silicon (Si)-Total		2.49	2.42		mg/L	2.7	20	31-AUG-22
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	31-AUG-22
Sodium (Na)-Total		1.14	1.13		mg/L	0.7	20	31-AUG-22
Strontium (Sr)-Total		0.0138	0.0138		mg/L	0.1	20	31-AUG-22
Sulfur (S)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	31-AUG-22
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	31-AUG-22
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	31-AUG-22
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-AUG-22
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-AUG-22
Titanium (Ti)-Total		0.00438	0.00414		mg/L	5.6	20	31-AUG-22
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-AUG-22
Uranium (U)-Total		0.000037	0.000034		mg/L	6.5	20	31-AUG-22
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	31-AUG-22
Zinc (Zn)-Total		0.0039	0.0037		mg/L	5.0	20	31-AUG-22
Zirconium (Zr)-Total		0.00024	0.00025		mg/L	2.4	20	31-AUG-22
WG3760156-2 LCS								
Aluminum (Al)-Total			94.0		%		80-120	31-AUG-22
Antimony (Sb)-Total			105.0		%		80-120	31-AUG-22
Arsenic (As)-Total			104.6		%		80-120	31-AUG-22
Barium (Ba)-Total			103.2		%		80-120	31-AUG-22
Beryllium (Be)-Total			92.8		%		80-120	31-AUG-22
Bismuth (Bi)-Total			94.4		%		80-120	31-AUG-22
Boron (B)-Total			91.0		%		80-120	31-AUG-22
Cadmium (Cd)-Total			98.0		%		80-120	31-AUG-22
Calcium (Ca)-Total			92.2		%		80-120	31-AUG-22
Cesium (Cs)-Total			106.1		%		80-120	31-AUG-22
Chromium (Cr)-Total			95.6		%		80-120	31-AUG-22
Cobalt (Co)-Total			95.2		%		80-120	31-AUG-22
Copper (Cu)-Total			95.1		%		80-120	31-AUG-22
Iron (Fe)-Total			94.8		%		80-120	31-AUG-22
Lead (Pb)-Total			88.7		%		80-120	31-AUG-22
Lithium (Li)-Total			86.1		%		80-120	31-AUG-22
Magnesium (Mg)-Total			92.4		%		80-120	31-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5852456								
WG3760156-2 LCS								
Manganese (Mn)-Total			94.0		%		80-120	31-AUG-22
Molybdenum (Mo)-Total			97.3		%		80-120	31-AUG-22
Nickel (Ni)-Total			93.9		%		80-120	31-AUG-22
Potassium (K)-Total			94.6		%		80-120	31-AUG-22
Phosphorus (P)-Total			97.7		%		80-120	31-AUG-22
Rubidium (Rb)-Total			96.1		%		80-120	31-AUG-22
Selenium (Se)-Total			102.4		%		80-120	31-AUG-22
Silicon (Si)-Total			94.8		%		80-120	31-AUG-22
Silver (Ag)-Total			101.8		%		80-120	31-AUG-22
Sodium (Na)-Total			99.9		%		80-120	31-AUG-22
Strontium (Sr)-Total			98.3		%		80-120	31-AUG-22
Sulfur (S)-Total			112.1		%		80-120	31-AUG-22
Tellurium (Te)-Total			99.9		%		80-120	31-AUG-22
Thallium (Tl)-Total			89.5		%		80-120	31-AUG-22
Thorium (Th)-Total			82.2		%		80-120	31-AUG-22
Tin (Sn)-Total			99.3		%		80-120	31-AUG-22
Titanium (Ti)-Total			89.9		%		80-120	31-AUG-22
Tungsten (W)-Total			91.7		%		80-120	31-AUG-22
Uranium (U)-Total			83.8		%		80-120	31-AUG-22
Vanadium (V)-Total			96.1		%		80-120	31-AUG-22
Zinc (Zn)-Total			98.5		%		80-120	31-AUG-22
Zirconium (Zr)-Total			87.1		%		80-120	31-AUG-22
WG3760366-2 LCS								
Aluminum (Al)-Total			100.6		%		80-120	31-AUG-22
Antimony (Sb)-Total			100.8		%		80-120	31-AUG-22
Arsenic (As)-Total			99.0		%		80-120	31-AUG-22
Barium (Ba)-Total			100.7		%		80-120	31-AUG-22
Beryllium (Be)-Total			100.2		%		80-120	31-AUG-22
Bismuth (Bi)-Total			97.3		%		80-120	31-AUG-22
Boron (B)-Total			101.5		%		80-120	31-AUG-22
Cadmium (Cd)-Total			100.2		%		80-120	31-AUG-22
Calcium (Ca)-Total			98.6		%		80-120	31-AUG-22
Cesium (Cs)-Total			101.4		%		80-120	31-AUG-22
Chromium (Cr)-Total			102.0		%		80-120	31-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5852456								
WG3760366-2 LCS								
Cobalt (Co)-Total			101.1		%		80-120	31-AUG-22
Copper (Cu)-Total			100.3		%		80-120	31-AUG-22
Iron (Fe)-Total			100.2		%		80-120	31-AUG-22
Lead (Pb)-Total			96.3		%		80-120	31-AUG-22
Lithium (Li)-Total			100.7		%		80-120	31-AUG-22
Magnesium (Mg)-Total			99.7		%		80-120	31-AUG-22
Manganese (Mn)-Total			99.9		%		80-120	31-AUG-22
Molybdenum (Mo)-Total			96.9		%		80-120	31-AUG-22
Nickel (Ni)-Total			100.3		%		80-120	31-AUG-22
Potassium (K)-Total			99.0		%		80-120	31-AUG-22
Phosphorus (P)-Total			106.2		%		80-120	31-AUG-22
Rubidium (Rb)-Total			99.5		%		80-120	31-AUG-22
Selenium (Se)-Total			99.7		%		80-120	31-AUG-22
Silicon (Si)-Total			101.1		%		80-120	31-AUG-22
Silver (Ag)-Total			101.0		%		80-120	31-AUG-22
Sodium (Na)-Total			104.2		%		80-120	31-AUG-22
Strontium (Sr)-Total			100.7		%		80-120	31-AUG-22
Sulfur (S)-Total			104.4		%		80-120	31-AUG-22
Tellurium (Te)-Total			96.5		%		80-120	31-AUG-22
Thallium (Tl)-Total			94.3		%		80-120	31-AUG-22
Thorium (Th)-Total			90.7		%		80-120	31-AUG-22
Tin (Sn)-Total			97.9		%		80-120	31-AUG-22
Titanium (Ti)-Total			96.8		%		80-120	31-AUG-22
Tungsten (W)-Total			99.0		%		80-120	31-AUG-22
Uranium (U)-Total			96.8		%		80-120	31-AUG-22
Vanadium (V)-Total			100.7		%		80-120	31-AUG-22
Zinc (Zn)-Total			96.4		%		80-120	31-AUG-22
Zirconium (Zr)-Total			88.8		%		80-120	31-AUG-22
WG3760156-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-AUG-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	31-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5852456								
WG3760156-1 MB								
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	31-AUG-22
Boron (B)-Total			<0.010		mg/L		0.01	31-AUG-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	31-AUG-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	31-AUG-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	31-AUG-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-AUG-22
Iron (Fe)-Total			<0.010		mg/L		0.01	31-AUG-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	31-AUG-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	31-AUG-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-AUG-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	31-AUG-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-AUG-22
Potassium (K)-Total			<0.050		mg/L		0.05	31-AUG-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	31-AUG-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	31-AUG-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	31-AUG-22
Silicon (Si)-Total			<0.10		mg/L		0.1	31-AUG-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	31-AUG-22
Sodium (Na)-Total			<0.050		mg/L		0.05	31-AUG-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	31-AUG-22
Sulfur (S)-Total			<0.50		mg/L		0.5	31-AUG-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	31-AUG-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	31-AUG-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	31-AUG-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	31-AUG-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	31-AUG-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-AUG-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	31-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5852456								
WG3760366-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-AUG-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	31-AUG-22
Boron (B)-Total			<0.010		mg/L		0.01	31-AUG-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	31-AUG-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	31-AUG-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	31-AUG-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-AUG-22
Iron (Fe)-Total			<0.010		mg/L		0.01	31-AUG-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	31-AUG-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	31-AUG-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-AUG-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	31-AUG-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-AUG-22
Potassium (K)-Total			<0.050		mg/L		0.05	31-AUG-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	31-AUG-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	31-AUG-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	31-AUG-22
Silicon (Si)-Total			<0.10		mg/L		0.1	31-AUG-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	31-AUG-22
Sodium (Na)-Total			<0.050		mg/L		0.05	31-AUG-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	31-AUG-22
Sulfur (S)-Total			<0.50		mg/L		0.5	31-AUG-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	31-AUG-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	31-AUG-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	31-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5852456								
WG3760366-1 MB								
Tungsten (W)-Total			<0.00010		mg/L		0.0001	31-AUG-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	31-AUG-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	31-AUG-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-AUG-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	31-AUG-22
WG3760366-5 MS		**L2730355-12**						
Aluminum (Al)-Total			97.0		%		70-130	31-AUG-22
Antimony (Sb)-Total			99.3		%		70-130	31-AUG-22
Arsenic (As)-Total			99.95		%		70-130	31-AUG-22
Barium (Ba)-Total			100.8		%		70-130	31-AUG-22
Beryllium (Be)-Total			101.6		%		70-130	31-AUG-22
Bismuth (Bi)-Total			115.9		%		70-130	31-AUG-22
Boron (B)-Total			104.9		%		70-130	31-AUG-22
Cadmium (Cd)-Total			102.1		%		70-130	31-AUG-22
Calcium (Ca)-Total			96.2		%		70-130	31-AUG-22
Cesium (Cs)-Total			103.0		%		70-130	31-AUG-22
Chromium (Cr)-Total			101.6		%		70-130	31-AUG-22
Cobalt (Co)-Total			103.3		%		70-130	31-AUG-22
Copper (Cu)-Total			102.6		%		70-130	31-AUG-22
Iron (Fe)-Total			101.7		%		70-130	31-AUG-22
Lead (Pb)-Total			100.5		%		70-130	31-AUG-22
Lithium (Li)-Total			103.8		%		70-130	31-AUG-22
Magnesium (Mg)-Total			96.5		%		70-130	31-AUG-22
Manganese (Mn)-Total			N/A	MS-B	%		-	31-AUG-22
Molybdenum (Mo)-Total			96.8		%		70-130	31-AUG-22
Nickel (Ni)-Total			105.0		%		70-130	31-AUG-22
Potassium (K)-Total			99.7		%		70-130	31-AUG-22
Phosphorus (P)-Total			101.1		%		70-130	31-AUG-22
Rubidium (Rb)-Total			99.1		%		70-130	31-AUG-22
Selenium (Se)-Total			106.6		%		70-130	31-AUG-22
Silicon (Si)-Total			98.3		%		70-130	31-AUG-22
Silver (Ag)-Total			102.0		%		70-130	31-AUG-22
Sodium (Na)-Total			104.9		%		70-130	31-AUG-22
Strontium (Sr)-Total			94.0		%		70-130	31-AUG-22

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5852456								
WG3760366-5 MS		**L2730355-12**						
Sulfur (S)-Total			102.6		%		70-130	31-AUG-22
Tellurium (Te)-Total			99.4		%		70-130	31-AUG-22
Thallium (Tl)-Total			96.5		%		70-130	31-AUG-22
Thorium (Th)-Total			100.8		%		70-130	31-AUG-22
Tin (Sn)-Total			99.4		%		70-130	31-AUG-22
Titanium (Ti)-Total			101.6		%		70-130	31-AUG-22
Tungsten (W)-Total			101.3		%		70-130	31-AUG-22
Uranium (U)-Total			99.9		%		70-130	31-AUG-22
Vanadium (V)-Total			101.5		%		70-130	31-AUG-22
Zinc (Zn)-Total			98.7		%		70-130	31-AUG-22
Zirconium (Zr)-Total			98.7		%		70-130	31-AUG-22
N-TOTKJ-WP	**Water**							
Batch R5852757								
WG3760429-11 DUP		**L2730355-16**						
Total Kjeldahl Nitrogen		0.43	0.43		mg/L	1.2	20	01-SEP-22
WG3760429-10 LCS								
Total Kjeldahl Nitrogen			96.2		%		75-125	01-SEP-22
WG3760429-6 LCS								
Total Kjeldahl Nitrogen			112.3		%		75-125	01-SEP-22
WG3760429-5 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	01-SEP-22
WG3760429-9 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	01-SEP-22
WG3760429-12 MS		**L2730355-16**						
Total Kjeldahl Nitrogen			103.8		%		70-130	01-SEP-22
NH3-COL-WP	**Water**							
Batch R5852738								
WG3760809-27 DUP		**L2730355-18**						
Ammonia, Total (as N)		0.024	0.027		mg/L	12	20	01-SEP-22
WG3760809-22 LCS								
Ammonia, Total (as N)			99.5		%		85-115	01-SEP-22
WG3760809-26 LCS								
Ammonia, Total (as N)			98.5		%		85-115	01-SEP-22
WG3760809-21 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	01-SEP-22
WG3760809-25 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-COL-WP	**Water**							
Batch R5852738								
WG3760809-25 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	01-SEP-22
WG3760809-28 MS		**L2730355-18**						
Ammonia, Total (as N)			91.5		%		75-125	01-SEP-22
Batch R5854676								
WG3761365-2 LCS								
Ammonia, Total (as N)			99.5		%		85-115	06-SEP-22
WG3761365-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	06-SEP-22
NO2-L-IC-N-WP	**Water**							
Batch R5856696								
WG3760513-11 DUP		**L2730355-5**						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	31-AUG-22
WG3760513-10 LCS								
Nitrite (as N)			95.3		%		90-110	31-AUG-22
WG3760513-6 LCS								
Nitrite (as N)			95.2		%		90-110	31-AUG-22
WG3760513-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	31-AUG-22
WG3760513-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	31-AUG-22
WG3760513-12 MS		**L2730355-5**						
Nitrite (as N)			101.1		%		75-125	31-AUG-22
NO3-L-IC-N-WP	**Water**							
Batch R5863438								
WG3762087-2 LCS								
Nitrate (as N)			100.2		%		90-110	09-SEP-22
WG3762087-6 LCS								
Nitrate (as N)			100.2		%		90-110	09-SEP-22
WG3762087-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	09-SEP-22
WG3762087-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	09-SEP-22
P-T-COL-WP	**Water**							
Batch R5853577								
WG3760935-7 DUP		**L2730355-9**						
Phosphorus (P)-Total		0.0157	0.0152		mg/L	3.2	20	02-SEP-22
WG3760935-2 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-WP	**Water**							
Batch R5853577								
WG3760935-2 LCS								
Phosphorus (P)-Total			96.7		%		80-120	02-SEP-22
WG3760935-6 LCS								
Phosphorus (P)-Total			96.3		%		80-120	02-SEP-22
WG3760935-1 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	02-SEP-22
WG3760935-5 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	02-SEP-22
WG3760935-8 MS		**L2730355-10**						
Phosphorus (P)-Total			98.0		%		70-130	02-SEP-22
P-T-L-COL-WP	**Water**							
Batch R5851576								
WG3760273-2 LCS								
Phosphorus (P)-Total			98.3		%		80-120	08-SEP-22
WG3760273-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	08-SEP-22
SO4-IC-N-WP	**Water**							
Batch R5856696								
WG3760513-11 DUP		**L2730355-5**						
Sulfate (SO4)		8.90	8.91		mg/L	0.1	20	31-AUG-22
WG3760513-10 LCS								
Sulfate (SO4)			99.7		%		90-110	31-AUG-22
WG3760513-6 LCS								
Sulfate (SO4)			99.3		%		90-110	31-AUG-22
WG3760513-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	31-AUG-22
WG3760513-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	31-AUG-22
WG3760513-12 MS		**L2730355-5**						
Sulfate (SO4)			105.1		%		75-125	31-AUG-22
SOLIDS-TOTSUS-LR-WP	**Water**							
Batch R5851318								
WG3760110-9 DUP		**L2730355-10**						
Total Suspended Solids		3.1	2.7		mg/L	14	20	30-AUG-22
WG3760110-8 LCS								
Total Suspended Solids			105.3		%		85-115	30-AUG-22
WG3760110-7 MB								
Total Suspended Solids			<1.0		mg/L		1	30-AUG-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TOTSUS-LR-WP	**Water**							
Batch R5853277								
WG3759923-2 LCS								
Total Suspended Solids			98.7		%		85-115	29-AUG-22
WG3759923-1 MB								
Total Suspended Solids			<1.0		mg/L		1	29-AUG-22

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
G	QC result did not meet ALS DQO. Refer to narrative comments for further information.
J	Duplicate results and limits are expressed in terms of absolute difference.
J,G	QC result did not meet ALS DQO. Refer to narrative comments for further information. Duplicate expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Anions and Nutrients							
Alkalinity, Total (as CaCO3)							
	15	24-AUG-22 12:50	09-SEP-22 14:37	14	16	days	EHT
	19	24-AUG-22	14-SEP-22 16:18	14	21	days	EHT
Nitrate in Water by IC (Low Level)							
	1	23-AUG-22 09:56	09-SEP-22 11:00	3	17	days	EHTR
	2	23-AUG-22 10:35	09-SEP-22 11:00	3	17	days	EHTR
	3	23-AUG-22 11:10	09-SEP-22 11:00	3	17	days	EHTR
	4	23-AUG-22 09:15	09-SEP-22 11:00	3	17	days	EHTR
	5	23-AUG-22 11:47	09-SEP-22 11:00	3	17	days	EHTR
	6	23-AUG-22 13:17	09-SEP-22 11:00	3	17	days	EHTR
	7	23-AUG-22 14:14	09-SEP-22 11:00	3	17	days	EHTR
	8	23-AUG-22 14:43	09-SEP-22 11:00	3	17	days	EHTL
	9	23-AUG-22 15:24	09-SEP-22 11:00	3	17	days	EHTL
	10	23-AUG-22	09-SEP-22 11:00	3	17	days	EHTR
	11	23-AUG-22 16:25	09-SEP-22 11:00	3	17	days	EHTL
	12	24-AUG-22 09:21	09-SEP-22 11:00	3	16	days	EHTL
	13	24-AUG-22 10:41	09-SEP-22 11:00	3	16	days	EHTL
	14	24-AUG-22 12:32	09-SEP-22 11:00	3	16	days	EHTL
	15	24-AUG-22 12:50	09-SEP-22 11:00	3	16	days	EHTL
	16	24-AUG-22 13:38	09-SEP-22 11:00	3	16	days	EHTL
	17	24-AUG-22 14:58	09-SEP-22 11:00	3	16	days	EHT
	18	24-AUG-22 15:22	09-SEP-22 11:00	3	16	days	EHT
	19	24-AUG-22	09-SEP-22 11:00	3	16	days	EHTL
Nitrite in Water by IC (Low Level)							
	1	23-AUG-22 09:56	31-AUG-22 11:45	3	8	days	EHTR
	2	23-AUG-22 10:35	31-AUG-22 11:45	3	8	days	EHTR
	3	23-AUG-22 11:10	31-AUG-22 11:45	3	8	days	EHTR
	4	23-AUG-22 09:15	31-AUG-22 11:45	3	8	days	EHTR
	5	23-AUG-22 11:47	31-AUG-22 11:45	3	8	days	EHTR
	6	23-AUG-22 13:17	31-AUG-22 11:45	3	8	days	EHTR
	7	23-AUG-22 14:14	31-AUG-22 11:45	3	8	days	EHTR
	8	23-AUG-22 14:43	31-AUG-22 11:45	3	8	days	EHTL
	9	23-AUG-22 15:24	31-AUG-22 11:45	3	8	days	EHTL
	10	23-AUG-22	31-AUG-22 11:45	3	8	days	EHTR
	11	23-AUG-22 16:25	31-AUG-22 11:45	3	8	days	EHTL
	12	24-AUG-22 09:21	31-AUG-22 11:45	3	7	days	EHTL
	13	24-AUG-22 10:41	31-AUG-22 11:45	3	7	days	EHTL
	14	24-AUG-22 12:32	31-AUG-22 11:45	3	7	days	EHTL
	15	24-AUG-22 12:50	31-AUG-22 11:45	3	7	days	EHTL
	16	24-AUG-22 13:38	31-AUG-22 11:45	3	7	days	EHTL
	17	24-AUG-22 14:58	31-AUG-22 11:45	3	7	days	EHT
	18	24-AUG-22 15:22	31-AUG-22 11:45	3	7	days	EHT
	19	24-AUG-22	31-AUG-22 11:45	3	7	days	EHTL

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2730355 were received on 26-AUG-22 14:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the

US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Ch... (COC) / Analytical Request Form

COC Number: 22 -

Page 2 of 2

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L2730355-COFC

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Select Report Format: ☐ ...

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	Karen.Mathers@Stantec.com
Email 2	Brad.Horne@stantec.com
Email 3	Jeremy.Jackson@stantec.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	
Email 2	

Turnaround Time (TAT) Requested

- ☑ Routine [R] if received by 3pm M-F - no surcharges apply
- ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
- ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
- ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
- ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
- ☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	Q88846
Job #:	ALAMOS
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: Judy Dahmer Sampler: BE

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	~~HG-D-CVAF-VA~~	~~HG-T-U-CVAF-VA~~	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	~~MEHG-D-GCAF-VA, MEHG-T-GCAF-VA~~	CN-T-L, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
13	AQF42	24-08-22	1041	W	8	✓	✓	✓			✓	✓	✓	✓	✓	✓		✓	✓			
14	AQF75	"	1237	"	"	"	"	"			"	"	"	"	"	"		"	"			
15	AQF70	"	1350	"	"	"	"	"			"	"	"	"	"	"		"	"			
16	AQF38	"	1338	"	"	"	"	"			"	"	"	"	"	"		"	"			
17	AQF43	"	1458	"	"	"	"	"			"	"	"	"	"	"		"	"			
18	AQF44	"	1537	"	"	"	"	"			"	"	"	"	"	"		"	"			
19	TRIP BLANK	—	—	"	"	"	"	"			"	"	"	"	"	"		"	"			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

dissolved metals + dissolved nutrients field filtered

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				21.6			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: B. Lynch	Date: Aug. 25/22	Time: 0830	Received by:	Date: AUG 26 2022	Time: 1400	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Alamos Gold Inc.
ATTN: KAREN MATHERS
C/O Stantec Consulting
500 - 311 Portage Avenue
Winnipeg MB R3B 2B9

Date Received: 21-SEP-22
Report Date: 06-OCT-22 11:03 (MT)
Version: FINAL

Client Phone: 204-924-5735

Certificate of Analysis

Lab Work Order #: L2733754

Project P.O. #: NOT SUBMITTED
Job Reference: ALAMOS
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2733754-1	L2733754-2	L2733754-3	L2733754-4	L2733754-5
Description	W	W	W	W	W
Sampled Date	17-SEP-22	17-SEP-22	17-SEP-22	17-SEP-22	17-SEP-22
Sampled Time	10:14	10:36	10:53	11:24	11:53
Client ID	AQF41	AQF40	AQF43	AQF46	AQM29C
Grouping / **Analyte**					
WATER					
Physical Tests Hardness (as CaCO3) (mg/L)	10.4	9.97	10.4	28.1	10.3
Total Suspended Solids (mg/L)	1.5	<1.0	1.3	<1.0	1.7
Anions and Nutrients Alkalinity, Total (as CaCO3) (mg/L)	10.3	10.2	10.6	30.4	10.0
Ammonia, Total (as N) (mg/L)	0.012	0.022	0.025	0.026	0.020
Bicarbonate (HCO3) (mg/L)	12.6	12.4	12.9	37.1	12.2
Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
Chloride (Cl) (mg/L)	0.19	0.20	0.19	0.11	0.43
Fluoride (F) (mg/L)	0.063	0.063	0.063	0.043	0.055
Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
Nitrate and Nitrite as N (mg/L)	<0.0051	<0.0051	<0.0051	0.0081	<0.0051
Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	0.0081	<0.0050
Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen (mg/L)	0.23	0.45	0.96	0.44	0.28
Phosphorus (P)-Total (mg/L)	0.0157	0.0116	0.0129	0.0129	0.0161
Sulfate (SO4) (mg/L)	0.63	0.71	0.46	0.36	2.47
Cyanides Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	11.4 RRV	9.68	11.4 RRV	13.8	9.96
Total Organic Carbon (mg/L)	9.01 RRV	8.98	9.11 RRV	12.1	9.22
Inorganic Parameters Acidity (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	3.5	<2.0
Total Metals Aluminum (Al)-Total (mg/L)	0.0567	0.0456	0.0489	0.0277	0.0747
Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total (mg/L)	0.00018	0.00020	0.00019	0.00029	0.00020
Barium (Ba)-Total (mg/L)	0.00637	0.00614	0.00612	0.00913	0.00664
Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total (mg/L)	3.18	3.02	3.05	9.00	3.28
Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Total (mg/L)	0.00017	0.00013	0.00017	<0.00010	0.00017
Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00020
Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00145
Iron (Fe)-Total (mg/L)	0.212	0.185	0.197	0.073	0.395

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2733754-6 W 17-SEP-22 12:32 AQM71	L2733754-7 W 17-SEP-22 12:50 AQM72	L2733754-8 W 17-SEP-22 13:07 AQM73	L2733754-9 W 17-SEP-22 13:29 AQM74	L2733754-10 W 17-SEP-22 13:55 AQM28
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	46.0	9.51	15.3	14.3	22.3
	Total Suspended Solids (mg/L)	<1.0	3.7	<1.0	1.8	3.4
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	34.6	6.7	10.4	12.2	10.4
	Ammonia, Total (as N) (mg/L)	0.018	<0.010	0.022	0.039	0.014
	Bicarbonate (HCO3) (mg/L)	42.2	8.2	12.7	14.9	12.7
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	0.62	<0.10	0.10	0.27	0.76
	Fluoride (F) (mg/L)	0.041	0.037	0.052	0.051	0.062
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	0.0078	<0.0051	<0.0051	<0.0051	<0.0051
	Nitrate (as N) (mg/L)	0.0078	<0.0050	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.37	0.41	0.46	0.43	0.30
	Phosphorus (P)-Total (mg/L)	0.0090	0.0335	0.0171	0.0190	0.0189
	Sulfate (SO4) (mg/L)	8.72	<0.30	<0.30	0.56	10.2
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	19.2	17.5	26.8	16.0	12.6
	Total Organic Carbon (mg/L)	18.2	17.3	28.3	14.1	12.6
Inorganic Parameters	Acidity (as CaCO3) (mg/L)	3.2	5.3	7.5	4.1	<2.0
Total Metals	Aluminum (Al)-Total (mg/L)	0.0480	0.301	0.125	0.0844	0.217
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00029	0.00051	0.00042	0.00024	0.00027
	Barium (Ba)-Total (mg/L)	0.0100	0.0159	0.00596	0.00695	0.00837
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000189
	Calcium (Ca)-Total (mg/L)	16.2	3.35	5.22	4.29	6.52
	Cesium (Cs)-Total (mg/L)	<0.000010	0.000043	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00022	0.00069	0.00067	0.00475	0.00040
	Cobalt (Co)-Total (mg/L)	<0.00010	0.00058	0.00015	0.00014	0.00092
	Copper (Cu)-Total (mg/L)	<0.00050	0.00052	<0.00050	0.00058	0.00558
	Iron (Fe)-Total (mg/L)	0.215	7.11	0.611	0.243	0.889

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2733754-11 W 17-SEP-22 14:34 FIELD BLANK	L2733754-12 W 17-SEP-22 10:14 QC-01	L2733754-13 W 18-SEP-22 10:35 AQF45	L2733754-14 W 18-SEP-22 11:23 AQF42	L2733754-15 W 19-SEP-22 14:32 AQF7S
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	<0.20	22.7	12.2	10.6	15.6
	Total Suspended Solids (mg/L)	<1.0	3.3	1.4	1.2	<1.0
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	9.9	11.4	9.7	14.9
	Ammonia, Total (as N) (mg/L)	0.019	0.021	0.015	<0.010	0.030
	Bicarbonate (HCO3) (mg/L)	<1.2	12.1	13.9	11.8	18.2
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	<0.10	0.76	0.23	0.28	0.12
	Fluoride (F) (mg/L)	<0.020	0.059	0.065	0.063	0.043
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	<0.0051	<0.0051	0.0053	0.0065	<0.0051
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0053	0.0065	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.20	0.28	0.25	0.25	0.22
	Phosphorus (P)-Total (mg/L)	<0.0010	0.0187	0.0126	0.0103	0.0084
	Sulfate (SO4) (mg/L)	<0.30	10.2	0.56	0.51	0.68
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.28 RRV	12.5	12.0 RRV	11.2 RRV	10.2
	Total Organic Carbon (mg/L)	<0.50	12.5	9.34 RRV	9.10 RRV	9.47
Inorganic Parameters	Acidity (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
Total Metals	Aluminum (Al)-Total (mg/L)	0.0060	0.232	0.0754	0.0400	0.0239
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	<0.00010	0.00027	0.00020	0.00020	0.00021
	Barium (Ba)-Total (mg/L)	0.00081	0.00795	0.00648	0.00597	0.00777
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	0.0000181	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	<0.050	6.52	3.42	3.04	4.13
	Cesium (Cs)-Total (mg/L)	<0.000010	0.000011	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00010	0.00045	0.00020	0.00014	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010	0.00100	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	0.00580	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	<0.010	0.965	0.224	0.172	0.047

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2733754-16	L2733754-17	L2733754-18		
	Description	W	W	W		
	Sampled Date	19-SEP-22	19-SEP-22			
	Sampled Time	14:35	15:30			
	Client ID	AQF7D	AQF38	TRIP BLANK		
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	15.7	20.6	<0.20		
	Total Suspended Solids (mg/L)	1.3	4.1	<1.0		
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	15.4	22.6	<1.0		
	Ammonia, Total (as N) (mg/L)	0.022	0.018	<0.010		
	Bicarbonate (HCO3) (mg/L)	18.8	27.6	<1.2		
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10		
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60		
	Chloride (Cl) (mg/L)	0.10	0.17	<0.10		
	Fluoride (F) (mg/L)	0.043	0.084	<0.020		
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34		
	Nitrate and Nitrite as N (mg/L)	<0.0051	<0.0051	<0.0051		
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.29	0.60	<0.20		
	Phosphorus (P)-Total (mg/L)	0.0073	0.0148	<0.0010		
	Sulfate (SO4) (mg/L)	0.63	<0.30	<0.30		
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010		
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010		
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	9.59	13.5	<0.50		
	Total Organic Carbon (mg/L)	9.07	11.4	<0.50		
Inorganic Parameters	Acidity (as CaCO3) (mg/L)	<2.0	<2.0	<2.0		
Total Metals	Aluminum (Al)-Total (mg/L)	0.0794	0.0313	0.0058		
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Arsenic (As)-Total (mg/L)	0.00024	0.00020	<0.00010		
	Barium (Ba)-Total (mg/L)	0.00821	0.0105	0.00072		
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010		
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050		
	Calcium (Ca)-Total (mg/L)	4.21	6.13	<0.050		
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
	Chromium (Cr)-Total (mg/L)	0.0113	0.00029	<0.00010		
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Copper (Cu)-Total (mg/L)	0.00078	<0.00050	<0.00050		
	Iron (Fe)-Total (mg/L)	0.197	0.114	<0.010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2733754-1 W 17-SEP-22 10:14 AQF41	L2733754-2 W 17-SEP-22 10:36 AQF40	L2733754-3 W 17-SEP-22 10:53 AQF43	L2733754-4 W 17-SEP-22 11:24 AQF46	L2733754-5 W 17-SEP-22 11:53 AQM29C
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)	0.0013	0.0011	0.0011	<0.0010	0.0011
	Magnesium (Mg)-Total (mg/L)	0.909	0.876	0.890	1.94	0.825
	Manganese (Mn)-Total (mg/L)	0.0120	0.0108	0.0142	0.00759	0.0187
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	0.000114	0.000109	0.000107	0.000068	0.000052
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.0149
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Total (mg/L)	0.532	0.515	0.500	0.595	0.552
	Rubidium (Rb)-Total (mg/L)	0.00115	0.00107	0.00109	0.00089	0.00100
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	0.000119	0.000065	<0.000050
	Silicon (Si)-Total (mg/L)	2.49	2.33	2.41	1.09	2.66
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	1.16	1.10	1.08	1.05	1.10
	Strontium (Sr)-Total (mg/L)	0.0117	0.0132	0.0130	0.0158	0.0130
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	<0.50	0.63
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	0.00030	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010	0.00013	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00167	0.00101	0.00127	0.00055	0.00141
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	0.000029	0.000027	0.000027	<0.000010	0.000028
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	0.0051	<0.0030	<0.0030	<0.0030	0.0033
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0237	0.0318	0.0271	0.0215	0.0450
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00016	0.00019	0.00019	0.00028	0.00018
	Barium (Ba)-Dissolved (mg/L)	0.00565	0.00584	0.00582	0.00907	0.00652
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.84	2.73	2.86	8.37	2.94
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2733754-6	L2733754-7	L2733754-8	L2733754-9	L2733754-10
	Description	W	W	W	W	W
	Sampled Date	17-SEP-22	17-SEP-22	17-SEP-22	17-SEP-22	17-SEP-22
	Sampled Time	12:32	12:50	13:07	13:29	13:55
	Client ID	AQM71	AQM72	AQM73	AQM74	AQM28
Grouping	**Analyte**					
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	0.000150	<0.000050	<0.000050	0.000061
	Lithium (Li)-Total (mg/L)	0.0011	0.0010	0.0014	0.0011	0.0011
	Magnesium (Mg)-Total (mg/L)	1.81	0.676	1.04	0.988	1.49
	Manganese (Mn)-Total (mg/L)	0.0153	0.0958	0.0248	0.0173	0.0434
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000067	0.000104	0.000924	0.000073
	Nickel (Ni)-Total (mg/L)	0.00051	0.00079	0.00078	0.00357	0.0797
	Phosphorus (P)-Total (mg/L)	<0.030	0.086	<0.030	<0.030	<0.030
	Potassium (K)-Total (mg/L)	0.677	0.196	0.089	0.545	0.672
	Rubidium (Rb)-Total (mg/L)	0.00082	0.00075	<0.00020	0.00075	0.00096
	Selenium (Se)-Total (mg/L)	0.000050	0.000072	0.000061	0.000063	0.000051
	Silicon (Si)-Total (mg/L)	4.09	2.89	4.28	1.56	2.61
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	1.61	0.691	1.29	1.12	1.41
	Strontium (Sr)-Total (mg/L)	0.0243	0.0110	0.0121	0.0112	0.0200
	Sulfur (S)-Total (mg/L)	3.07	<0.50	<0.50	<0.50	3.36
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00097	0.0142	0.00140	0.00103	0.00177
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	0.000012	0.000031	<0.000010	0.000019	0.000030
	Vanadium (V)-Total (mg/L)	<0.00050	0.00151	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	0.0143
	Zirconium (Zr)-Total (mg/L)	<0.00020	0.00023	0.00021	<0.00020	<0.00020
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0395	0.0782	0.112	0.0655	0.141
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00024	0.00027	0.00042	0.00021	0.00024
	Barium (Ba)-Dissolved (mg/L)	0.00962	0.00718	0.00570	0.00660	0.00881
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000262
	Calcium (Ca)-Dissolved (mg/L)	15.6	2.90	4.69	4.16	6.62
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2733754-11	L2733754-12	L2733754-13	L2733754-14	L2733754-15
Description	W	W	W	W	W
Sampled Date	17-SEP-22	17-SEP-22	18-SEP-22	18-SEP-22	19-SEP-22
Sampled Time	14:34	10:14	10:35	11:23	14:32
Client ID	FIELD BLANK	QC-01	AQF45	AQF42	AQF7S
Grouping / **Analyte**					
WATER					
Total Metals Lead (Pb)-Total (mg/L)	<0.000050	0.000064	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total (mg/L)	<0.0010	0.0011	0.0011	0.0010	<0.0010
Magnesium (Mg)-Total (mg/L)	<0.0050	1.49	1.01	0.877	1.45
Manganese (Mn)-Total (mg/L)	<0.00010	0.0458	0.0184	0.0105	0.0127
Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000071	0.000096	0.000093	0.000079
Nickel (Ni)-Total (mg/L)	<0.00050	0.0811	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
Potassium (K)-Total (mg/L)	<0.050	0.683	0.536	0.517	0.519
Rubidium (Rb)-Total (mg/L)	<0.00020	0.00106	0.00110	0.00102	0.00095
Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000059
Silicon (Si)-Total (mg/L)	<0.10	2.71	2.36	2.28	0.85
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	<0.050	1.45	1.15	1.11	1.05
Strontium (Sr)-Total (mg/L)	<0.00020	0.0196	0.0132	0.0130	0.0125
Sulfur (S)-Total (mg/L)	<0.50	3.26	<0.50	<0.50	<0.50
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total (mg/L)	<0.00030	0.00233	0.00242	0.00076	0.00041
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	<0.000010	0.000035	0.000030	0.000024	0.000011
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	<0.0030	0.0133	<0.0030	0.0031	<0.0030
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.0053	0.140	0.0437	0.0247	0.0166
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00024	0.00020	0.00017	0.00021
Barium (Ba)-Dissolved (mg/L)	0.00082	0.00746	0.00621	0.00555	0.00757
Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000157	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved (mg/L)	<0.050	6.65	3.34	2.91	4.01
Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2733754-16	L2733754-17	L2733754-18		
	Description	W	W	W		
	Sampled Date	19-SEP-22	19-SEP-22			
	Sampled Time	14:35	15:30			
	Client ID	AQF7D	AQF38	TRIP BLANK		
Grouping	**Analyte**					
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	0.000053	<0.000050	<0.000050		
	Lithium (Li)-Total (mg/L)	<0.0010	<0.0010	<0.0010		
	Magnesium (Mg)-Total (mg/L)	1.47	1.50	<0.0050		
	Manganese (Mn)-Total (mg/L)	0.0237	0.0491	<0.00010		
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Total (mg/L)	0.000246	0.00222	<0.000050		
	Nickel (Ni)-Total (mg/L)	0.00116	<0.00050	<0.00050		
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030		
	Potassium (K)-Total (mg/L)	0.523	0.566	<0.050		
	Rubidium (Rb)-Total (mg/L)	0.00098	0.00088	<0.00020		
	Selenium (Se)-Total (mg/L)	0.000061	0.000057	<0.000050		
	Silicon (Si)-Total (mg/L)	0.93	1.27	<0.10		
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
	Sodium (Na)-Total (mg/L)	1.06	1.22	<0.050		
	Strontium (Sr)-Total (mg/L)	0.0127	0.0156	<0.00020		
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50		
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020		
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Tin (Sn)-Total (mg/L)	0.00142	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	0.00178	0.00045	<0.00030		
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Uranium (U)-Total (mg/L)	0.000015	0.000011	<0.000010		
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050		
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030		
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020		
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0172	0.0155	0.0042		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00024	0.00016	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.00813	0.00911	0.00067		
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010		
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050		
	Calcium (Ca)-Dissolved (mg/L)	4.01	5.93	<0.050		
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2733754-1 W 17-SEP-22 10:14 AQF41	L2733754-2 W 17-SEP-22 10:36 AQF40	L2733754-3 W 17-SEP-22 10:53 AQF43	L2733754-4 W 17-SEP-22 11:24 AQF46	L2733754-5 W 17-SEP-22 11:53 AQM29C
WATER						
Dissolved Metals	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00022	0.00012	<0.00010	0.00016
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00042	0.00264 RRV	0.00036	0.00032	0.00405 RRV
	Iron (Fe)-Dissolved (mg/L)	0.115	0.130	0.124	0.053	0.206
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000148	<0.000050	<0.000050	0.000148
	Lithium (Li)-Dissolved (mg/L)	0.0011	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.801	0.765	0.796	1.74	0.730
	Manganese (Mn)-Dissolved (mg/L)	0.00444	0.00603	0.00576	0.00640	0.00923
	Molybdenum (Mo)-Dissolved (mg/L)	0.000102	0.000140	0.000089	0.000062	0.000077
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.0125
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.478	0.494	0.488	0.568	0.529
	Rubidium (Rb)-Dissolved (mg/L)	0.00098	0.00109	0.00101	0.00088	0.00094
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000052	<0.000050	<0.000050	0.000054
	Silicon (Si)-Dissolved (mg/L)	2.11	2.22	2.20	1.02	2.49
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.02	1.01	0.975	0.950	0.978
	Strontium (Sr)-Dissolved (mg/L)	0.0125	0.0122	0.0125	0.0157	0.0124
	Sulfur (S)-Dissolved (mg/L)	0.75	<0.50	<0.50	<0.50	0.51
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	0.00056 RRV	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00034	0.00055	0.00041	<0.00030	0.00038
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.000019	0.000023	0.000020	<0.000010	0.000021
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0048	<0.0010	0.0026	0.0051
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals	Chromium, Hexavalent (ug/L)	<0.50	0.50	<0.50	0.54	<0.50

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2733754-6	L2733754-7	L2733754-8	L2733754-9	L2733754-10
Description	W	W	W	W	W
Sampled Date	17-SEP-22	17-SEP-22	17-SEP-22	17-SEP-22	17-SEP-22
Sampled Time	12:32	12:50	13:07	13:29	13:55
Client ID	AQM71	AQM72	AQM73	AQM74	AQM28
Grouping / **Analyte**					
WATER					
Dissolved Metals Chromium (Cr)-Dissolved (mg/L)	0.00015	0.00020	0.00026	0.00015	0.00025
Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00017	0.00014	<0.00010	0.00061
Copper (Cu)-Dissolved (mg/L)	0.00045	0.00047	0.00123	0.00047	0.00616
Iron (Fe)-Dissolved (mg/L)	0.158	2.24	0.537	0.126	0.568
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000083	<0.000050	0.000142
Lithium (Li)-Dissolved (mg/L)	0.0010	<0.0010	0.0013	0.0010	0.0011
Magnesium (Mg)-Dissolved (mg/L)	1.70	0.550	0.881	0.944	1.41
Manganese (Mn)-Dissolved (mg/L)	0.0138	0.0367	0.0234	0.00848	0.0350
Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	0.000052	0.000411	0.000094
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00060	<0.00050	0.0740
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
Potassium (K)-Dissolved (mg/L)	0.666	0.120	0.084	0.523	0.652
Rubidium (Rb)-Dissolved (mg/L)	0.00089	0.00028	<0.00020	0.00077	0.00098
Selenium (Se)-Dissolved (mg/L)	0.000057	<0.000050	0.000064	<0.000050	0.000098
Silicon (Si)-Dissolved (mg/L)	3.89	2.51	4.01	1.38	2.38
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	1.46	0.609	1.14	1.06	1.37
Strontium (Sr)-Dissolved (mg/L)	0.0253	0.00960	0.0112	0.0108	0.0197
Sulfur (S)-Dissolved (mg/L)	3.61	<0.50	<0.50	<0.50	2.90
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	0.00011	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	0.00064	0.00182	0.00115	0.00060	0.00109
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved (mg/L)	0.000011	<0.000010	<0.000010	0.000016	0.000026
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0016	0.0019	<0.0010	0.0171
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	0.00023	<0.00020	<0.00020
Speciated Metals Chromium, Hexavalent (ug/L)	0.61	0.57	<0.50	<0.50	<0.50

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2733754-11	L2733754-12	L2733754-13	L2733754-14	L2733754-15
Description	W	W	W	W	W
Sampled Date	17-SEP-22	17-SEP-22	18-SEP-22	18-SEP-22	19-SEP-22
Sampled Time	14:34	10:14	10:35	11:23	14:32
Client ID	FIELD BLANK	QC-01	AQF45	AQF42	AQF7S
Grouping / **Analyte**					
WATER					
Dissolved Metals Chromium (Cr)-Dissolved (mg/L)	0.00012	0.00020	0.00014	0.00012	0.00013
Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00047	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	0.00120	0.00460	0.00028	0.00021	0.00095
Iron (Fe)-Dissolved (mg/L)	<0.010	0.621	0.160	0.119	0.022
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0011	0.0010	<0.0010	<0.0010
Magnesium (Mg)-Dissolved (mg/L)	<0.0050	1.48	0.941	0.814	1.36
Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.0245	0.0146	0.00402	0.00077
Molybdenum (Mo)-Dissolved (mg/L)	0.000063	0.000077	0.000098	0.000083	0.000092
Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.0748	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
Potassium (K)-Dissolved (mg/L)	<0.050	0.694	0.490	0.503	0.504
Rubidium (Rb)-Dissolved (mg/L)	<0.00020	0.00098	0.00092	0.00096	0.00093
Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000073	<0.000050	0.000061	0.000086
Silicon (Si)-Dissolved (mg/L)	<0.050	2.44	2.21	2.14	0.794
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	<0.050	1.48	1.13	1.05	1.03
Strontium (Sr)-Dissolved (mg/L)	<0.00010	0.0205	0.0131	0.0121	0.0117
Sulfur (S)-Dissolved (mg/L)	<0.50	2.93	<0.50	<0.50	<0.50
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Dissolved (mg/L)	0.00013	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.00030	0.00091	0.00117	0.00032	<0.00030
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Dissolved (mg/L)	<0.000010	0.000027	0.000025	0.000021	<0.000010
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0111	<0.0010	<0.0010	0.0025
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2733754-16	L2733754-17	L2733754-18		
Description	W	W	W		
Sampled Date	19-SEP-22	19-SEP-22			
Sampled Time	14:35	15:30			
Client ID	AQF7D	AQF38	TRIP BLANK		
Grouping / **Analyte**					
WATER					
Dissolved Metals Chromium (Cr)-Dissolved (mg/L)	0.00013	0.00049	0.00024		
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
Copper (Cu)-Dissolved (mg/L)	0.00127	0.00032	<0.00020		
Iron (Fe)-Dissolved (mg/L)	0.030	0.024	<0.010		
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		
Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010		
Magnesium (Mg)-Dissolved (mg/L)	1.39	1.41	<0.0050		
Manganese (Mn)-Dissolved (mg/L)	0.00284	0.00718	<0.00010		
Molybdenum (Mo)-Dissolved (mg/L)	0.000098	0.00207	<0.000050		
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050		
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030		
Potassium (K)-Dissolved (mg/L)	0.495	0.601	<0.050		
Rubidium (Rb)-Dissolved (mg/L)	0.00092	0.00086	<0.00020		
Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		
Silicon (Si)-Dissolved (mg/L)	0.774	1.17	<0.050		
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
Sodium (Na)-Dissolved (mg/L)	1.06	1.20	<0.050		
Strontium (Sr)-Dissolved (mg/L)	0.0120	0.0149	<0.00010		
Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50		
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020		
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
Tin (Sn)-Dissolved (mg/L)	0.00093	<0.00010	<0.00010		
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030		
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
Uranium (U)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050		
Zinc (Zn)-Dissolved (mg/L)	0.0018	0.0053	<0.0010		
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020		
Speciated Metals Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Cadmium (Cd)-Dissolved	B	L2733754-1
Matrix Spike	Selenium (Se)-Dissolved	MES	L2733754-2, -3, -4, -5, -6, -7, -8
Matrix Spike	Silver (Ag)-Dissolved	MES	L2733754-2, -3, -4, -5, -6, -7, -8
Matrix Spike	Dissolved Organic Carbon	MS-B	L2733754-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L2733754-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2733754-2, -3, -4, -5, -6, -7, -8
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2733754-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L2733754-2, -3, -4, -5, -6, -7, -8
Matrix Spike	Boron (B)-Dissolved	MS-B	L2733754-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2733754-2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2733754-10, -11, -12, -13, -14, -15, -16, -17, -18, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2733754-1
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2733754-2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2733754-2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2733754-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2733754-2, -3, -4, -5, -6, -7, -8
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2733754-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2733754-2, -3, -4, -5, -6, -7, -8
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2733754-2, -3, -4, -5, -6, -7, -8
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2733754-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2733754-2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2733754-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2733754-2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2733754-1
Matrix Spike	Boron (B)-Total	MS-B	L2733754-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2733754-1
Matrix Spike	Copper (Cu)-Total	MS-B	L2733754-1
Matrix Spike	Iron (Fe)-Total	MS-B	L2733754-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2733754-1
Matrix Spike	Manganese (Mn)-Total	MS-B	L2733754-1
Matrix Spike	Potassium (K)-Total	MS-B	L2733754-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2733754-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2733754-1
Matrix Spike	Sulfur (S)-Total	MS-B	L2733754-1
Matrix Spike	Zinc (Zn)-Total	MS-B	L2733754-1
Matrix Spike	Ammonia, Total (as N)	MS-B	L2733754-18

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-WT	Water	Acidity (as CaCO3)	APHA 2310 B - Potentiometric Titration
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

Reference Information

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BR-IC-N-WP	Water	Bromide in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

C-TOC-HTC-WP	Water	Total Organic Carbon by Combustion	APHA 5310 B-WP

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-L-CFA-WT	Water	Low Level Free Cyanide in water by CFA	ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-WT	Water	Low Level Total Cyanide in water by CFA	ISO 14403-2:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, however it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-WT	Water	Low level WAD Cyanide in water by CFA	APHA 4500CN I-Weak acid Dist Colorimet

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

CR-CR6-PWQO-IC-WT	Water	Chromium +6	EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-T-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-D-CCMS-WP	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-TOTKJ-WP	Water	Total Kjeldahl Nitrogen	APHA 4500 NorgD (modified)

Aqueous samples are digested in a block digester with sulfuric acid and copper sulfate as a catalyst. Total Kjeldahl Nitrogen is then analyzed using a discrete analyzer with colorimetric detection.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-L-IC-N-WP	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

P-T-L-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-LR-WP	Water	Total Suspended Solids	APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 Œ 105°C.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Alamos Gold Inc.
C/O Stantec Consulting 500 - 311 Portage Avenue
Winnipeg MB R3B 2B9
Contact: KAREN MATHERS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-WT	**Water**							
Batch R5868464								
WG3765402-2 LCS								
Acidity (as CaCO3)			103.3		%		85-115	01-OCT-22
WG3765402-1 MB								
Acidity (as CaCO3)			<2.0		mg/L		3	01-OCT-22
ALK-TITR-WP	**Water**							
Batch R5866643								
WG3765255-19 LCS								
Alkalinity, Total (as CaCO3)			100.6		%		85-115	27-SEP-22
WG3765255-16 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-SEP-22
Batch R5866754								
WG3765392-15 LCS								
Alkalinity, Total (as CaCO3)			99.8		%		85-115	28-SEP-22
WG3765392-17 LCS								
Alkalinity, Total (as CaCO3)			102.8		%		85-115	28-SEP-22
WG3765392-6 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-SEP-22
WG3765392-9 MB								
Alkalinity, Total (as CaCO3)			1.0		mg/L		1	28-SEP-22
Batch R5869356								
WG3766491-4 LCS								
Alkalinity, Total (as CaCO3)			98.8		%		85-115	04-OCT-22
WG3766491-1 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-OCT-22
BR-IC-N-WP	**Water**							
Batch R5866443								
WG3764644-11 DUP		**L2733754-6**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	23-SEP-22
WG3764644-10 LCS								
Bromide (Br)			100.2		%		85-115	23-SEP-22
WG3764644-6 LCS								
Bromide (Br)			99.3		%		85-115	23-SEP-22
WG3764644-5 MB								
Bromide (Br)			<0.10		mg/L		0.1	23-SEP-22
WG3764644-9 MB								
Bromide (Br)			<0.10		mg/L		0.1	23-SEP-22
WG3764644-12 MS		**L2733754-6**						
Bromide (Br)			103.4		%		75-125	23-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DOC-HTC-WP	**Water**							
Batch R5866463								
WG3765028-3 DUP		**L2733754-16**						
Dissolved Organic Carbon		9.59	9.48		mg/L	1.2	20	27-SEP-22
WG3765028-2 LCS								
Dissolved Organic Carbon			109.4		%		80-120	27-SEP-22
WG3765028-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-SEP-22
WG3765028-4 MS		**L2733754-17**						
Dissolved Organic Carbon			N/A	MS-B	%		-	27-SEP-22
C-TOC-HTC-WP	**Water**							
Batch R5866464								
WG3765031-3 DUP		**L2733754-16**						
Total Organic Carbon		9.07	9.08		mg/L	0.1	20	27-SEP-22
WG3765031-2 LCS								
Total Organic Carbon			101.2		%		80-120	27-SEP-22
WG3765031-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	27-SEP-22
WG3765031-4 MS		**L2733754-17**						
Total Organic Carbon			N/A	MS-B	%		-	27-SEP-22
CL-L-IC-N-WP	**Water**							
Batch R5866443								
WG3764644-11 DUP		**L2733754-6**						
Chloride (Cl)		0.62	0.62		mg/L	1.0	20	23-SEP-22
WG3764644-10 LCS								
Chloride (Cl)			98.8		%		90-110	23-SEP-22
WG3764644-6 LCS								
Chloride (Cl)			99.5		%		90-110	23-SEP-22
WG3764644-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	23-SEP-22
WG3764644-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	23-SEP-22
WG3764644-12 MS		**L2733754-6**						
Chloride (Cl)			102.8		%		75-125	23-SEP-22
CN-FREE-L-CFA-WT	**Water**							
Batch R5866690								
WG3765086-3 DUP		**L2733754-2**						
Cyanide, Free		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-SEP-22
WG3765086-12 LCS								
Cyanide, Free			107.0		%		80-120	27-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-FREE-L-CFA-WT	**Water**							
Batch R5866690								
WG3765086-2 LCS								
Cyanide, Free			105.8		%		80-120	27-SEP-22
WG3765086-7 LCS								
Cyanide, Free			106.4		%		80-120	27-SEP-22
WG3765086-1 MB								
Cyanide, Free			<0.0010		mg/L		0.001	27-SEP-22
WG3765086-11 MB								
Cyanide, Free			<0.0010		mg/L		0.001	27-SEP-22
WG3765086-6 MB								
Cyanide, Free			<0.0010		mg/L		0.001	27-SEP-22
WG3765086-4 MS		**L2733754-2**						
Cyanide, Free			105.5		%		75-125	27-SEP-22
CN-T-L-CFA-WT	**Water**							
Batch R5866690								
WG3765086-3 DUP		**L2733754-2**						
Cyanide, Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-SEP-22
WG3765086-12 LCS								
Cyanide, Total			94.0		%		80-120	27-SEP-22
WG3765086-2 LCS								
Cyanide, Total			94.0		%		80-120	27-SEP-22
WG3765086-7 LCS								
Cyanide, Total			94.9		%		80-120	27-SEP-22
WG3765086-1 MB								
Cyanide, Total			<0.0010		mg/L		0.001	27-SEP-22
WG3765086-11 MB								
Cyanide, Total			<0.0010		mg/L		0.001	27-SEP-22
WG3765086-6 MB								
Cyanide, Total			<0.0010		mg/L		0.001	27-SEP-22
WG3765086-4 MS		**L2733754-2**						
Cyanide, Total			92.1		%		70-130	27-SEP-22
CN-WAD-L-CFA-WT	**Water**							
Batch R5866690								
WG3765086-3 DUP		**L2733754-2**						
Cyanide, Weak Acid Diss		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-SEP-22
WG3765086-12 LCS								
Cyanide, Weak Acid Diss			112.5		%		80-120	27-SEP-22
WG3765086-2 LCS								
Cyanide, Weak Acid Diss			111.7		%		80-120	27-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-WAD-L-CFA-WT	**Water**							
Batch R5866690								
WG3765086-7 LCS								
Cyanide, Weak Acid Diss			111.5		%		80-120	27-SEP-22
WG3765086-1 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	27-SEP-22
WG3765086-11 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	27-SEP-22
WG3765086-6 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	27-SEP-22
WG3765086-4 MS		**L2733754-2**						
Cyanide, Weak Acid Diss			111.2		%		70-130	27-SEP-22
CR-CR6-PWQO-IC-WT	**Water**							
Batch R5866445								
WG3764996-2 LCS								
Chromium, Hexavalent			99.3		%		80-120	26-SEP-22
WG3764996-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	26-SEP-22
Batch R5866446								
WG3764997-2 LCS								
Chromium, Hexavalent			97.8		%		80-120	26-SEP-22
WG3764997-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	26-SEP-22
F-IC-N-WP	**Water**							
Batch R5866443								
WG3764644-11 DUP		**L2733754-6**						
Fluoride (F)		0.041	0.041		mg/L	0.8	20	23-SEP-22
WG3764644-10 LCS								
Fluoride (F)			102.2		%		90-110	23-SEP-22
WG3764644-6 LCS								
Fluoride (F)			102.7		%		90-110	23-SEP-22
WG3764644-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	23-SEP-22
WG3764644-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	23-SEP-22
WG3764644-12 MS		**L2733754-6**						
Fluoride (F)			108.8		%		75-125	23-SEP-22
HG-T-CVAA-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WP	**Water**							
Batch R5866286								
WG3764758-10 LCS								
Mercury (Hg)-Total			97.8		%		80-120	23-SEP-22
WG3764758-2 LCS								
Mercury (Hg)-Total			90.4		%		80-120	23-SEP-22
WG3764758-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	23-SEP-22
WG3764758-9 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	23-SEP-22
Batch R5866577								
WG3765150-3 DUP		**L2733754-2**						
Mercury (Hg)-Total		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	27-SEP-22
WG3765150-2 LCS								
Mercury (Hg)-Total			96.6		%		80-120	27-SEP-22
WG3765150-6 LCS								
Mercury (Hg)-Total			94.6		%		80-120	27-SEP-22
WG3765150-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	27-SEP-22
WG3765150-5 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	27-SEP-22
WG3765150-4 MS		**L2733754-3**						
Mercury (Hg)-Total			90.5		%		70-130	27-SEP-22
MET-D-CCMS-WP	**Water**							
Batch R5866757								
WG3764465-2 LCS								
Aluminum (Al)-Dissolved			97.2		%		80-120	23-SEP-22
Antimony (Sb)-Dissolved			94.4		%		80-120	23-SEP-22
Arsenic (As)-Dissolved			99.9		%		80-120	23-SEP-22
Barium (Ba)-Dissolved			101.6		%		80-120	23-SEP-22
Beryllium (Be)-Dissolved			99.2		%		80-120	23-SEP-22
Bismuth (Bi)-Dissolved			96.1		%		80-120	23-SEP-22
Boron (B)-Dissolved			96.6		%		80-120	23-SEP-22
Cadmium (Cd)-Dissolved			101.4		%		80-120	23-SEP-22
Calcium (Ca)-Dissolved			101.8		%		80-120	23-SEP-22
Cesium (Cs)-Dissolved			96.6		%		80-120	23-SEP-22
Chromium (Cr)-Dissolved			99.4		%		80-120	23-SEP-22
Cobalt (Co)-Dissolved			99.6		%		80-120	23-SEP-22
Copper (Cu)-Dissolved			99.8		%		80-120	23-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5866757								
WG3764465-2 LCS								
Iron (Fe)-Dissolved			97.2		%		80-120	23-SEP-22
Lead (Pb)-Dissolved			93.2		%		80-120	23-SEP-22
Lithium (Li)-Dissolved			102.7		%		80-120	23-SEP-22
Magnesium (Mg)-Dissolved			103.7		%		80-120	23-SEP-22
Manganese (Mn)-Dissolved			97.9		%		80-120	23-SEP-22
Molybdenum (Mo)-Dissolved			91.8		%		80-120	23-SEP-22
Nickel (Ni)-Dissolved			98.3		%		80-120	23-SEP-22
Phosphorus (P)-Dissolved			98.7		%		80-120	23-SEP-22
Potassium (K)-Dissolved			99.6		%		80-120	23-SEP-22
Rubidium (Rb)-Dissolved			100.4		%		80-120	23-SEP-22
Selenium (Se)-Dissolved			106.1		%		80-120	23-SEP-22
Silicon (Si)-Dissolved			98.2		%		80-120	23-SEP-22
Silver (Ag)-Dissolved			93.7		%		80-120	23-SEP-22
Sodium (Na)-Dissolved			104.4		%		80-120	23-SEP-22
Strontium (Sr)-Dissolved			97.6		%		80-120	23-SEP-22
Sulfur (S)-Dissolved			87.0		%		80-120	23-SEP-22
Tellurium (Te)-Dissolved			93.1		%		80-120	23-SEP-22
Thallium (Tl)-Dissolved			94.2		%		80-120	23-SEP-22
Thorium (Th)-Dissolved			87.8		%		80-120	23-SEP-22
Tin (Sn)-Dissolved			96.4		%		80-120	23-SEP-22
Titanium (Ti)-Dissolved			96.6		%		80-120	23-SEP-22
Tungsten (W)-Dissolved			92.9		%		80-120	23-SEP-22
Uranium (U)-Dissolved			89.8		%		80-120	23-SEP-22
Vanadium (V)-Dissolved			100.1		%		80-120	23-SEP-22
Zinc (Zn)-Dissolved			97.6		%		80-120	23-SEP-22
Zirconium (Zr)-Dissolved			83.6		%		80-120	23-SEP-22
WG3764466-2 LCS								
Aluminum (Al)-Dissolved			97.3		%		80-120	23-SEP-22
Antimony (Sb)-Dissolved			96.9		%		80-120	23-SEP-22
Arsenic (As)-Dissolved			99.9		%		80-120	23-SEP-22
Barium (Ba)-Dissolved			102.1		%		80-120	23-SEP-22
Beryllium (Be)-Dissolved			100.2		%		80-120	23-SEP-22
Bismuth (Bi)-Dissolved			92.1		%		80-120	23-SEP-22
Boron (B)-Dissolved			98.0		%		80-120	23-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5866757								
WG3764466-2 LCS								
Cadmium (Cd)-Dissolved			101.0		%		80-120	23-SEP-22
Calcium (Ca)-Dissolved			101.2		%		80-120	23-SEP-22
Cesium (Cs)-Dissolved			98.3		%		80-120	23-SEP-22
Chromium (Cr)-Dissolved			98.7		%		80-120	23-SEP-22
Cobalt (Co)-Dissolved			98.8		%		80-120	23-SEP-22
Copper (Cu)-Dissolved			98.2		%		80-120	23-SEP-22
Iron (Fe)-Dissolved			96.4		%		80-120	23-SEP-22
Lead (Pb)-Dissolved			91.2		%		80-120	23-SEP-22
Lithium (Li)-Dissolved			102.4		%		80-120	23-SEP-22
Magnesium (Mg)-Dissolved			103.8		%		80-120	23-SEP-22
Manganese (Mn)-Dissolved			98.0		%		80-120	23-SEP-22
Molybdenum (Mo)-Dissolved			93.7		%		80-120	23-SEP-22
Nickel (Ni)-Dissolved			98.6		%		80-120	23-SEP-22
Phosphorus (P)-Dissolved			100.3		%		80-120	23-SEP-22
Potassium (K)-Dissolved			99.1		%		80-120	23-SEP-22
Rubidium (Rb)-Dissolved			95.9		%		80-120	23-SEP-22
Selenium (Se)-Dissolved			103.1		%		80-120	23-SEP-22
Silicon (Si)-Dissolved			100.9		%		80-120	23-SEP-22
Silver (Ag)-Dissolved			95.9		%		80-120	23-SEP-22
Sodium (Na)-Dissolved			102.5		%		80-120	23-SEP-22
Strontium (Sr)-Dissolved			99.5		%		80-120	23-SEP-22
Sulfur (S)-Dissolved			80.3		%		80-120	23-SEP-22
Tellurium (Te)-Dissolved			90.6		%		80-120	23-SEP-22
Thallium (Tl)-Dissolved			92.3		%		80-120	23-SEP-22
Thorium (Th)-Dissolved			87.8		%		80-120	23-SEP-22
Tin (Sn)-Dissolved			97.0		%		80-120	23-SEP-22
Titanium (Ti)-Dissolved			94.5		%		80-120	23-SEP-22
Tungsten (W)-Dissolved			94.3		%		80-120	23-SEP-22
Uranium (U)-Dissolved			90.2		%		80-120	23-SEP-22
Vanadium (V)-Dissolved			99.4		%		80-120	23-SEP-22
Zinc (Zn)-Dissolved			97.4		%		80-120	23-SEP-22
Zirconium (Zr)-Dissolved			86.9		%		80-120	23-SEP-22
WG3764465-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5866757								
WG3764465-1 MB								
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-SEP-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	23-SEP-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-SEP-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-SEP-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-SEP-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-SEP-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-SEP-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	23-SEP-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-SEP-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-SEP-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-SEP-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	23-SEP-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-SEP-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5866757								
WG3764465-1 MB								
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-SEP-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-SEP-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-22
WG3764466-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-SEP-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-SEP-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	23-SEP-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-SEP-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-SEP-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-SEP-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-SEP-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-SEP-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	23-SEP-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-SEP-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-SEP-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-SEP-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	23-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5866757								
WG3764466-1 MB								
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-SEP-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-SEP-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-SEP-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-22
Batch R5866878								
WG3764870-2 LCS								
Aluminum (Al)-Dissolved			101.0		%		80-120	27-SEP-22
Antimony (Sb)-Dissolved			97.4		%		80-120	27-SEP-22
Arsenic (As)-Dissolved			99.2		%		80-120	27-SEP-22
Barium (Ba)-Dissolved			100.5		%		80-120	27-SEP-22
Beryllium (Be)-Dissolved			96.5		%		80-120	27-SEP-22
Bismuth (Bi)-Dissolved			94.4		%		80-120	27-SEP-22
Boron (B)-Dissolved			105.0		%		80-120	27-SEP-22
Cadmium (Cd)-Dissolved			99.4		%		80-120	27-SEP-22
Calcium (Ca)-Dissolved			100.3		%		80-120	27-SEP-22
Cesium (Cs)-Dissolved			96.1		%		80-120	27-SEP-22
Chromium (Cr)-Dissolved			95.3		%		80-120	27-SEP-22
Cobalt (Co)-Dissolved			98.3		%		80-120	27-SEP-22
Copper (Cu)-Dissolved			94.9		%		80-120	27-SEP-22
Iron (Fe)-Dissolved			95.0		%		80-120	27-SEP-22
Lead (Pb)-Dissolved			94.7		%		80-120	27-SEP-22
Lithium (Li)-Dissolved			109.0		%		80-120	27-SEP-22
Magnesium (Mg)-Dissolved			104.9		%		80-120	27-SEP-22
Manganese (Mn)-Dissolved			99.8		%		80-120	27-SEP-22
Molybdenum (Mo)-Dissolved			96.9		%		80-120	27-SEP-22
Nickel (Ni)-Dissolved			96.2		%		80-120	27-SEP-22
Phosphorus (P)-Dissolved			104.1		%		80-120	27-SEP-22
Potassium (K)-Dissolved			98.2		%		80-120	27-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch	**R5866878**							
WG3764870-2	**LCS**							
Rubidium (Rb)-Dissolved			98.9		%		80-120	27-SEP-22
Selenium (Se)-Dissolved			96.9		%		80-120	27-SEP-22
Silicon (Si)-Dissolved			101.5		%		80-120	27-SEP-22
Silver (Ag)-Dissolved			97.6		%		80-120	27-SEP-22
Sodium (Na)-Dissolved			97.4		%		80-120	27-SEP-22
Strontium (Sr)-Dissolved			98.1		%		80-120	27-SEP-22
Sulfur (S)-Dissolved			97.9		%		80-120	27-SEP-22
Tellurium (Te)-Dissolved			90.4		%		80-120	27-SEP-22
Thallium (Tl)-Dissolved			94.6		%		80-120	27-SEP-22
Thorium (Th)-Dissolved			88.3		%		80-120	27-SEP-22
Titanium (Ti)-Dissolved			96.9		%		80-120	27-SEP-22
Tungsten (W)-Dissolved			95.4		%		80-120	27-SEP-22
Uranium (U)-Dissolved			89.5		%		80-120	27-SEP-22
Vanadium (V)-Dissolved			98.9		%		80-120	27-SEP-22
Zinc (Zn)-Dissolved			96.9		%		80-120	27-SEP-22
Zirconium (Zr)-Dissolved			87.9		%		80-120	27-SEP-22
WG3764870-1	**MB**							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-SEP-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-SEP-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-SEP-22
Cadmium (Cd)-Dissolved			<0.000005(	B	mg/L		0.000005	27-SEP-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-SEP-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	27-SEP-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-SEP-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-SEP-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-SEP-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-SEP-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5866878								
WG3764870-1 MB								
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-SEP-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-SEP-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	27-SEP-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-SEP-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	27-SEP-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-SEP-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-SEP-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-SEP-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-SEP-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	27-SEP-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	27-SEP-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-SEP-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-SEP-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-SEP-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-SEP-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-SEP-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	27-SEP-22
MET-T-CCMS-WP	**Water**							
Batch R5866586								
WG3764743-2 LCS								
Aluminum (Al)-Total			101.7		%		80-120	26-SEP-22
Antimony (Sb)-Total			99.4		%		80-120	26-SEP-22
Arsenic (As)-Total			101.9		%		80-120	26-SEP-22
Barium (Ba)-Total			103.4		%		80-120	26-SEP-22
Beryllium (Be)-Total			105.6		%		80-120	26-SEP-22
Bismuth (Bi)-Total			105.2		%		80-120	26-SEP-22
Boron (B)-Total			110.1		%		80-120	26-SEP-22
Cadmium (Cd)-Total			103.6		%		80-120	26-SEP-22
Calcium (Ca)-Total			104.8		%		80-120	26-SEP-22
Cesium (Cs)-Total			95.9		%		80-120	26-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5866586								
WG3764743-2 LCS								
Chromium (Cr)-Total			104.2		%		80-120	26-SEP-22
Cobalt (Co)-Total			104.1		%		80-120	26-SEP-22
Copper (Cu)-Total			104.3		%		80-120	26-SEP-22
Iron (Fe)-Total			109.7		%		80-120	26-SEP-22
Lead (Pb)-Total			96.6		%		80-120	26-SEP-22
Lithium (Li)-Total			104.7		%		80-120	26-SEP-22
Magnesium (Mg)-Total			102.6		%		80-120	26-SEP-22
Manganese (Mn)-Total			102.1		%		80-120	26-SEP-22
Molybdenum (Mo)-Total			98.4		%		80-120	26-SEP-22
Nickel (Ni)-Total			104.1		%		80-120	26-SEP-22
Potassium (K)-Total			102.3		%		80-120	26-SEP-22
Phosphorus (P)-Total			103.1		%		80-120	26-SEP-22
Rubidium (Rb)-Total			103.4		%		80-120	26-SEP-22
Selenium (Se)-Total			105.6		%		80-120	26-SEP-22
Silicon (Si)-Total			109.8		%		80-120	26-SEP-22
Silver (Ag)-Total			99.0		%		80-120	26-SEP-22
Sodium (Na)-Total			109.6		%		80-120	26-SEP-22
Strontium (Sr)-Total			95.0		%		80-120	26-SEP-22
Sulfur (S)-Total			104.6		%		80-120	26-SEP-22
Tellurium (Te)-Total			88.1		%		80-120	26-SEP-22
Thallium (Tl)-Total			98.8		%		80-120	26-SEP-22
Thorium (Th)-Total			93.5		%		80-120	26-SEP-22
Tin (Sn)-Total			97.6		%		80-120	26-SEP-22
Titanium (Ti)-Total			104.4		%		80-120	26-SEP-22
Tungsten (W)-Total			99.4		%		80-120	26-SEP-22
Vanadium (V)-Total			104.6		%		80-120	26-SEP-22
Zinc (Zn)-Total			101.4		%		80-120	26-SEP-22
Zirconium (Zr)-Total			96.7		%		80-120	26-SEP-22
WG3764743-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	26-SEP-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	26-SEP-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	26-SEP-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	26-SEP-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	26-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5866586								
WG3764743-1 MB								
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	26-SEP-22
Boron (B)-Total			<0.010		mg/L		0.01	26-SEP-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	26-SEP-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	26-SEP-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	26-SEP-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	26-SEP-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	26-SEP-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	26-SEP-22
Iron (Fe)-Total			<0.010		mg/L		0.01	26-SEP-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	26-SEP-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	26-SEP-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	26-SEP-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	26-SEP-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	26-SEP-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	26-SEP-22
Potassium (K)-Total			<0.050		mg/L		0.05	26-SEP-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	26-SEP-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	26-SEP-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	26-SEP-22
Silicon (Si)-Total			<0.10		mg/L		0.1	26-SEP-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	26-SEP-22
Sodium (Na)-Total			<0.050		mg/L		0.05	26-SEP-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	26-SEP-22
Sulfur (S)-Total			<0.50		mg/L		0.5	26-SEP-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	26-SEP-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	26-SEP-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	26-SEP-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	26-SEP-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	26-SEP-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	26-SEP-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	26-SEP-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	26-SEP-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	26-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5866757								
WG3764317-4 DUP		**L2733754-2**						
Aluminum (Al)-Total		0.0456	0.0431		mg/L	5.6	20	23-SEP-22
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-22
Arsenic (As)-Total		0.00020	0.00020		mg/L	0.6	20	23-SEP-22
Barium (Ba)-Total		0.00614	0.00616		mg/L	0.3	20	23-SEP-22
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-22
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-SEP-22
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-SEP-22
Cadmium (Cd)-Total		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	23-SEP-22
Calcium (Ca)-Total		3.02	3.03		mg/L	0.1	20	23-SEP-22
Cesium (Cs)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-SEP-22
Chromium (Cr)-Total		0.00013	0.00016	J	mg/L	0.00003	0.0002	23-SEP-22
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-22
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-SEP-22
Iron (Fe)-Total		0.185	0.185		mg/L	0.4	20	23-SEP-22
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-SEP-22
Lithium (Li)-Total		0.0011	0.0011		mg/L	2.0	20	23-SEP-22
Magnesium (Mg)-Total		0.876	0.865		mg/L	1.2	20	23-SEP-22
Manganese (Mn)-Total		0.0108	0.0106		mg/L	1.7	20	23-SEP-22
Molybdenum (Mo)-Total		0.000109	0.000109		mg/L	0.2	20	23-SEP-22
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-SEP-22
Potassium (K)-Total		0.515	0.517		mg/L	0.4	20	23-SEP-22
Phosphorus (P)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	23-SEP-22
Rubidium (Rb)-Total		0.00107	0.00110		mg/L	2.8	20	23-SEP-22
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-SEP-22
Silicon (Si)-Total		2.33	2.35		mg/L	1.1	20	23-SEP-22
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-SEP-22
Sodium (Na)-Total		1.10	1.07		mg/L	2.8	20	23-SEP-22
Strontium (Sr)-Total		0.0132	0.0131		mg/L	0.7	20	23-SEP-22
Sulfur (S)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	23-SEP-22
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	23-SEP-22
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-SEP-22
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-22
Tin (Sn)-Total		0.00013	0.00011		mg/L	16	20	23-SEP-22
Titanium (Ti)-Total		0.00101	0.00091		mg/L	11	20	23-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5866757								
WG3764317-4 DUP		**L2733754-2**						
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-22
Uranium (U)-Total		0.000027	0.000026		mg/L	3.9	20	23-SEP-22
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-SEP-22
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	23-SEP-22
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	23-SEP-22
WG3764317-2 LCS								
Aluminum (Al)-Total			104.3		%		80-120	23-SEP-22
Antimony (Sb)-Total			102.1		%		80-120	23-SEP-22
Arsenic (As)-Total			101.0		%		80-120	23-SEP-22
Barium (Ba)-Total			101.0		%		80-120	23-SEP-22
Beryllium (Be)-Total			102.2		%		80-120	23-SEP-22
Bismuth (Bi)-Total			99.2		%		80-120	23-SEP-22
Boron (B)-Total			101.1		%		80-120	23-SEP-22
Cadmium (Cd)-Total			101.3		%		80-120	23-SEP-22
Calcium (Ca)-Total			99.5		%		80-120	23-SEP-22
Cesium (Cs)-Total			99.0		%		80-120	23-SEP-22
Chromium (Cr)-Total			102.8		%		80-120	23-SEP-22
Cobalt (Co)-Total			101.7		%		80-120	23-SEP-22
Copper (Cu)-Total			101.1		%		80-120	23-SEP-22
Iron (Fe)-Total			100.7		%		80-120	23-SEP-22
Lead (Pb)-Total			99.0		%		80-120	23-SEP-22
Lithium (Li)-Total			104.3		%		80-120	23-SEP-22
Magnesium (Mg)-Total			108.1		%		80-120	23-SEP-22
Manganese (Mn)-Total			101.1		%		80-120	23-SEP-22
Molybdenum (Mo)-Total			96.3		%		80-120	23-SEP-22
Nickel (Ni)-Total			101.9		%		80-120	23-SEP-22
Potassium (K)-Total			105.6		%		80-120	23-SEP-22
Phosphorus (P)-Total			105.5		%		80-120	23-SEP-22
Rubidium (Rb)-Total			100.8		%		80-120	23-SEP-22
Selenium (Se)-Total			102.0		%		80-120	23-SEP-22
Silicon (Si)-Total			105.8		%		80-120	23-SEP-22
Silver (Ag)-Total			96.6		%		80-120	23-SEP-22
Sodium (Na)-Total			106.8		%		80-120	23-SEP-22
Strontium (Sr)-Total			99.9		%		80-120	23-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5866757								
WG3764317-2 LCS								
Sulfur (S)-Total			94.0		%		80-120	23-SEP-22
Tellurium (Te)-Total			93.3		%		80-120	23-SEP-22
Thallium (Tl)-Total			99.6		%		80-120	23-SEP-22
Thorium (Th)-Total			95.4		%		80-120	23-SEP-22
Tin (Sn)-Total			98.1		%		80-120	23-SEP-22
Titanium (Ti)-Total			100.9		%		80-120	23-SEP-22
Tungsten (W)-Total			96.1		%		80-120	23-SEP-22
Uranium (U)-Total			99.0		%		80-120	23-SEP-22
Vanadium (V)-Total			102.5		%		80-120	23-SEP-22
Zinc (Zn)-Total			100.6		%		80-120	23-SEP-22
Zirconium (Zr)-Total			88.2		%		80-120	23-SEP-22
WG3764317-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	23-SEP-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	23-SEP-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	23-SEP-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	23-SEP-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	23-SEP-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	23-SEP-22
Boron (B)-Total			<0.010		mg/L		0.01	23-SEP-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	23-SEP-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	23-SEP-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	23-SEP-22
Chromium (Cr)-Total			0.00010		mg/L		0.0001	23-SEP-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	23-SEP-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	23-SEP-22
Iron (Fe)-Total			<0.010		mg/L		0.01	23-SEP-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	23-SEP-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	23-SEP-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	23-SEP-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	23-SEP-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	23-SEP-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	23-SEP-22
Potassium (K)-Total			<0.050		mg/L		0.05	23-SEP-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	23-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5866757								
WG3764317-1 MB								
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	23-SEP-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	23-SEP-22
Silicon (Si)-Total			<0.10		mg/L		0.1	23-SEP-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	23-SEP-22
Sodium (Na)-Total			<0.050		mg/L		0.05	23-SEP-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	23-SEP-22
Sulfur (S)-Total			<0.50		mg/L		0.5	23-SEP-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	23-SEP-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	23-SEP-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	23-SEP-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	23-SEP-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	23-SEP-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	23-SEP-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	23-SEP-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	23-SEP-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	23-SEP-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	23-SEP-22
WG3764317-5 MS		**L2733754-2**						
Aluminum (Al)-Total			105.1		%		70-130	23-SEP-22
Antimony (Sb)-Total			105.2		%		70-130	23-SEP-22
Arsenic (As)-Total			106.6		%		70-130	23-SEP-22
Barium (Ba)-Total			106.1		%		70-130	23-SEP-22
Beryllium (Be)-Total			110.3		%		70-130	23-SEP-22
Bismuth (Bi)-Total			122.0		%		70-130	23-SEP-22
Boron (B)-Total			109.7		%		70-130	23-SEP-22
Cadmium (Cd)-Total			108.7		%		70-130	23-SEP-22
Calcium (Ca)-Total			105.8		%		70-130	23-SEP-22
Cesium (Cs)-Total			106.6		%		70-130	23-SEP-22
Chromium (Cr)-Total			108.7		%		70-130	23-SEP-22
Cobalt (Co)-Total			108.8		%		70-130	23-SEP-22
Copper (Cu)-Total			108.9		%		70-130	23-SEP-22
Iron (Fe)-Total			108.5		%		70-130	23-SEP-22
Lead (Pb)-Total			105.1		%		70-130	23-SEP-22
Lithium (Li)-Total			112.2		%		70-130	23-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5866757								
WG3764317-5 MS		**L2733754-2**						
Magnesium (Mg)-Total			115.0		%		70-130	23-SEP-22
Manganese (Mn)-Total			105.0		%		70-130	23-SEP-22
Molybdenum (Mo)-Total			101.8		%		70-130	23-SEP-22
Nickel (Ni)-Total			110.1		%		70-130	23-SEP-22
Potassium (K)-Total			106.8		%		70-130	23-SEP-22
Phosphorus (P)-Total			105.6		%		70-130	23-SEP-22
Rubidium (Rb)-Total			105.6		%		70-130	23-SEP-22
Selenium (Se)-Total			112.1		%		70-130	23-SEP-22
Silicon (Si)-Total			105.1		%		70-130	23-SEP-22
Silver (Ag)-Total			104.9		%		70-130	23-SEP-22
Sodium (Na)-Total			108.1		%		70-130	23-SEP-22
Strontium (Sr)-Total			99.0		%		70-130	23-SEP-22
Sulfur (S)-Total			108.5		%		70-130	23-SEP-22
Tellurium (Te)-Total			103.4		%		70-130	23-SEP-22
Thallium (Tl)-Total			104.5		%		70-130	23-SEP-22
Thorium (Th)-Total			109.7		%		70-130	23-SEP-22
Tin (Sn)-Total			104.2		%		70-130	23-SEP-22
Titanium (Ti)-Total			106.8		%		70-130	23-SEP-22
Tungsten (W)-Total			102.6		%		70-130	23-SEP-22
Uranium (U)-Total			103.3		%		70-130	23-SEP-22
Vanadium (V)-Total			108.7		%		70-130	23-SEP-22
Zinc (Zn)-Total			107.4		%		70-130	23-SEP-22
Zirconium (Zr)-Total			102.8		%		70-130	23-SEP-22
N-TOTKJ-WP	**Water**							
Batch R5866981								
WG3765254-11 DUP		**L2733754-9**						
Total Kjeldahl Nitrogen		0.43	0.35		mg/L	20	20	29-SEP-22
WG3765254-10 LCS								
Total Kjeldahl Nitrogen			97.5		%		75-125	29-SEP-22
WG3765254-6 LCS								
Total Kjeldahl Nitrogen			102.1		%		75-125	29-SEP-22
WG3765254-5 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	29-SEP-22
WG3765254-9 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	29-SEP-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
N-TOTKJ-WP	**Water**							
Batch R5866981								
WG3765254-12 MS		**L2733754-9**						
Total Kjeldahl Nitrogen			100.9		%		70-130	29-SEP-22
Batch R5867250								
WG3765532-6 LCS								
Total Kjeldahl Nitrogen			101.5		%		75-125	30-SEP-22
WG3765532-5 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	30-SEP-22
NH3-COL-WP	**Water**							
Batch R5867334								
WG3765925-18 LCS								
Ammonia, Total (as N)			93.3		%		85-115	30-SEP-22
WG3765925-20 LCS								
Ammonia, Total (as N)			93.6		%		85-115	30-SEP-22
WG3765925-17 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	30-SEP-22
WG3765925-19 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	30-SEP-22
Batch R5867337								
WG3766018-14 LCS								
Ammonia, Total (as N)			98.2		%		85-115	01-OCT-22
WG3766018-13 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	01-OCT-22
NO2-L-IC-N-WP	**Water**							
Batch R5866443								
WG3764644-11 DUP		**L2733754-6**						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	23-SEP-22
WG3764644-10 LCS								
Nitrite (as N)			97.9		%		90-110	23-SEP-22
WG3764644-6 LCS								
Nitrite (as N)			98.6		%		90-110	23-SEP-22
WG3764644-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	23-SEP-22
WG3764644-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	23-SEP-22
WG3764644-12 MS		**L2733754-6**						
Nitrite (as N)			101.8		%		75-125	23-SEP-22
NO3-L-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-WP	**Water**							
Batch R5866443								
WG3764644-11 DUP		**L2733754-6**						
Nitrate (as N)		0.0078	0.0067		mg/L	14	20	23-SEP-22
WG3764644-10 LCS								
Nitrate (as N)			100.7		%		90-110	23-SEP-22
WG3764644-6 LCS								
Nitrate (as N)			100.7		%		90-110	23-SEP-22
WG3764644-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	23-SEP-22
WG3764644-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	23-SEP-22
WG3764644-12 MS		**L2733754-6**						
Nitrate (as N)			103.7		%		75-125	23-SEP-22
P-T-COL-WP	**Water**							
Batch R5866352								
WG3764633-11 DUP		**L2733754-6**						
Phosphorus (P)-Total		0.0090	0.0089		mg/L	1.2	20	26-SEP-22
WG3764633-10 LCS								
Phosphorus (P)-Total			94.9		%		80-120	26-SEP-22
WG3764633-6 LCS								
Phosphorus (P)-Total			95.4		%		80-120	26-SEP-22
WG3764633-5 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	26-SEP-22
WG3764633-9 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	26-SEP-22
WG3764633-12 MS		**L2733754-7**						
Phosphorus (P)-Total			95.0		%		70-130	26-SEP-22
Batch R5867215								
WG3765684-10 LCS								
Phosphorus (P)-Total			97.0		%		80-120	30-SEP-22
WG3765684-9 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	30-SEP-22
P-T-L-COL-WP	**Water**							
Batch R5868463								
WG3765952-2 LCS								
Phosphorus (P)-Total			87.3		%		80-120	03-OCT-22
WG3765952-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	03-OCT-22
SO4-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP	**Water**							
Batch R5866443								
WG3764644-11 DUP		**L2733754-6**						
Sulfate (SO4)		8.72	8.72		mg/L	0.0	20	23-SEP-22
WG3764644-10 LCS								
Sulfate (SO4)			101.0		%		90-110	23-SEP-22
WG3764644-6 LCS								
Sulfate (SO4)			100.9		%		90-110	23-SEP-22
WG3764644-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	23-SEP-22
WG3764644-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	23-SEP-22
WG3764644-12 MS		**L2733754-6**						
Sulfate (SO4)			103.6		%		75-125	23-SEP-22
SOLIDS-TOTSUS-LR-WP	**Water**							
Batch R5866106								
WG3764312-3 DUP		**L2733754-9**						
Total Suspended Solids		1.8	1.7		mg/L	3.8	20	22-SEP-22
WG3764312-2 LCS								
Total Suspended Solids			96.3		%		85-115	22-SEP-22
WG3764312-1 MB								
Total Suspended Solids			<1.0		mg/L		1	22-SEP-22
Batch R5866223								
WG3764412-8 LCS								
Total Suspended Solids			104.0		%		85-115	23-SEP-22
WG3764412-7 MB								
Total Suspended Solids			<1.0		mg/L		1	23-SEP-22

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Anions and Nutrients							
Nitrate in Water by IC (Low Level)							
	1	17-SEP-22 10:14	23-SEP-22 10:00	3	6	days	EHTR
	2	17-SEP-22 10:36	23-SEP-22 10:00	3	6	days	EHTR
	3	17-SEP-22 10:53	23-SEP-22 10:00	3	6	days	EHTR
	4	17-SEP-22 11:24	23-SEP-22 10:00	3	6	days	EHTR
	5	17-SEP-22 11:53	23-SEP-22 10:00	3	6	days	EHTR
	6	17-SEP-22 12:32	23-SEP-22 10:00	3	6	days	EHTR
	7	17-SEP-22 12:50	23-SEP-22 10:00	3	6	days	EHTR
	8	17-SEP-22 13:07	23-SEP-22 10:00	3	6	days	EHTR
	9	17-SEP-22 13:29	23-SEP-22 10:00	3	6	days	EHTR
	10	17-SEP-22 13:55	23-SEP-22 10:00	3	6	days	EHTR
	11	17-SEP-22 14:34	23-SEP-22 10:00	3	6	days	EHTR
	12	17-SEP-22 10:14	23-SEP-22 10:00	3	6	days	EHTR
	13	18-SEP-22 10:35	23-SEP-22 10:00	3	5	days	EHTR
	14	18-SEP-22 11:23	23-SEP-22 10:00	3	5	days	EHTR
	15	19-SEP-22 14:32	23-SEP-22 10:00	3	4	days	EHT
	16	19-SEP-22 14:35	23-SEP-22 10:00	3	4	days	EHT
	17	19-SEP-22 15:30	23-SEP-22 10:00	3	4	days	EHT
Nitrite in Water by IC (Low Level)							
	1	17-SEP-22 10:14	23-SEP-22 10:00	3	6	days	EHTR
	2	17-SEP-22 10:36	23-SEP-22 10:00	3	6	days	EHTR
	3	17-SEP-22 10:53	23-SEP-22 10:00	3	6	days	EHTR
	4	17-SEP-22 11:24	23-SEP-22 10:00	3	6	days	EHTR
	5	17-SEP-22 11:53	23-SEP-22 10:00	3	6	days	EHTR
	6	17-SEP-22 12:32	23-SEP-22 10:00	3	6	days	EHTR
	7	17-SEP-22 12:50	23-SEP-22 10:00	3	6	days	EHTR
	8	17-SEP-22 13:07	23-SEP-22 10:00	3	6	days	EHTR
	9	17-SEP-22 13:29	23-SEP-22 10:00	3	6	days	EHTR
	10	17-SEP-22 13:55	23-SEP-22 10:00	3	6	days	EHTR
	11	17-SEP-22 14:34	23-SEP-22 10:00	3	6	days	EHTR
	12	17-SEP-22 10:14	23-SEP-22 10:00	3	6	days	EHTR
	13	18-SEP-22 10:35	23-SEP-22 10:00	3	5	days	EHTR
	14	18-SEP-22 11:23	23-SEP-22 10:00	3	5	days	EHTR
	15	19-SEP-22 14:32	23-SEP-22 10:00	3	4	days	EHT
	16	19-SEP-22 14:35	23-SEP-22 10:00	3	4	days	EHT
	17	19-SEP-22 15:30	23-SEP-22 10:00	3	4	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2733754 were received on 21-SEP-22 11:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

Quality Control Report

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

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L2733754-COFC

t Form

COC Number: 22 -

Page 1 of 2

Report To	Contact and company name below will appear on the final report	Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)	Turnaround Time (TAT) Requested	AFFIX ALS BARCODE LABEL HERE (ALS use only)
Company:	Stantec Consulting	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☑ Routine [R] if received by 3pm M-F - no surcharges apply	
Contact:	Karen Mathers	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	
Phone:	204-928-7621	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum	
	Company address below will appear on the final report		☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum	
Street:	500 - 311 Portage Ave	Email 1 or Fax Karen.Mathers@Stantec.com	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum	
City/Province:	Winnipeg, MB	Email 2 Brad.Horne@stantec.com	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.	
Postal Code:	R3B 2B9	Email 3 Jeremy.Jackson@stantec.com	Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.	
Invoice To	Same as Report To ☐ YES ☑ NO	**Invoice Recipients**	Date and Time Required for all E&P TATs:	dd-mmm-yy hh:mm am/pm
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	For all tests with rush TATs requested, please contact your AM to confirm availability.	
Company:	Alamos Gold	Email 1 or Fax		
Contact:		Email 2		

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q88846	AFE/Cost Center:	PO#
Job #:	ALAMOS	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (ALS use only):		ALS Contact: S.D.	Sampler: BE

Analysis Request

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	HG-T-CVAA-WP	SOLIDS-TOTSUS-LR-WP	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	CN-T-L, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	ACY-TITR-TB	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
					Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																
1	AQF41	17.09.22	1014	W	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
2	AQF40		1036		9																
3	AQF43		1053		9																
4	AQF46		1124		9																
5	AQM29C		1153		9																
6	AQM71		1232		9																
7	AQM72		1250		9																
8	AQM73		1307		9																
9	AQM74		1329		9																
10	AQM28		1355		9																
11	FIELD BLANK		1434		9																
12	QC-01		—		9																

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
4.1							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
B.Lynd	Sept.20/22	0900		SEP 21 2022	11:40			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS www.alsglobal.com

L2733754-COFC

COC Number: 22 -

Page 2 of 2

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: Karen.Mathers@Stantec.com
Email 2: Brad.Horne@stantec.com
Email 3: Jeremy.Jackson@stantec.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax:
Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	Q88846
Job #:	ALAMOS
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: D.D. Sampler: BS

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	HG-T-CVAA-WP	SOLIDS-TOTSUS-LR-WP	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	CN-T-L, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	ACY-TITR-TB		SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
13	AQF45	18.09.22	1035	W	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
14	AQF43	"	1123	"	9	"	"	"	"	"	"	"	"	"	"	"	"	"				
15	AQF75	19.09.22	1432	"	9	"	"	"	"	"	"	"	"	"	"	"	"	"				
16	AQF70	"	1435	"	9	"	"	"	"	"	"	"	"	"	"	"	"	"				
17	AQF38	"	1530	"	9	"	"	"	"	"	"	"	"	"	"	"	"	"				
18	TRIP BLANK	-	-	"	9	"	"	"	"	"	"	"	"	"	"	"	"	"				

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
4.1							

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
B.Bond	Sept. 20/22	0900

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
[signature]	SEP 21 2022	11:40

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Alamos Gold Inc.
ATTN: KAREN MATHERS
C/O Stantec Consulting
500 - 311 Portage Avenue
Winnipeg MB R3B 2B9

Date Received: 03-OCT-22
Report Date: 27-OCT-22 07:09 (MT)
Version: FINAL

Client Phone: 204-924-5735

Certificate of Analysis

Lab Work Order #: L2735222

Project P.O. #: NOT SUBMITTED
Job Reference: ALAMOS
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2735222-1 W 29-SEP-22 09:00 AQF44	L2735222-2 W 29-SEP-22 12:45 AQF34S	L2735222-3 W 29-SEP-22 12:48 AQF34D	L2735222-4 W 29-SEP-22 13:13 EP-SEEP	
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	12.2	138	139	181	
	Total Suspended Solids (mg/L)	1.5	1.9	1.7	<1.0	
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	11.4	89.9	89.2	113	
	Ammonia, Total (as N) (mg/L)	5.83 RRV	4.98 RRV	4.98	<0.010	
	Bicarbonate (HCO3) (mg/L)	13.9	110	109	138	
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	
	Chloride (Cl) (mg/L)	0.24	0.94	0.90	1.29	
	Fluoride (F) (mg/L)	0.061	0.078	0.080	0.081	
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	
	Nitrate and Nitrite as N (mg/L)	<0.0051	<0.0051	<0.0051	0.0779	
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	0.0779	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	7.36	11.2	11.1	0.25	
	Phosphorus (P)-Total (mg/L)	0.0122	0.0207	0.0238	0.0063	
	Sulfate (SO4) (mg/L)	0.47	40.3	40.4	59.3	
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Cyanide, Total (mg/L)	0.0018	<0.0010	<0.0010	<0.0010	
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	11.5	12.4	10.9	10.0	
	Total Organic Carbon (mg/L)	10.1	11.5	11.9	9.39	
Inorganic Parameters	Acidity (as CaCO3) (mg/L)	<2.0	<2.0	<2.0	<2.0	
Total Metals	Aluminum (Al)-Total (mg/L)	0.0544	0.0159	0.0152	0.0207	
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Total (mg/L)	0.00021	0.00134	0.00136	0.00216	
	Barium (Ba)-Total (mg/L)	0.00585	0.0163	0.0166	0.0129	
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	0.018	
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Calcium (Ca)-Total (mg/L)	3.44	34.3	33.8	43.8	
	Cesium (Cs)-Total (mg/L)	<0.000010	0.000063	0.000065	0.000192	
	Chromium (Cr)-Total (mg/L)	0.00016	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050 RRV	0.00052 RRV	0.00074	
	Iron (Fe)-Total (mg/L)	0.207	0.060	0.059	0.087	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2735222-1	L2735222-2	L2735222-3	L2735222-4	
Description	W	W	W	W	
Sampled Date	29-SEP-22	29-SEP-22	29-SEP-22	29-SEP-22	
Sampled Time	09:00	12:45	12:48	13:13	
Client ID	AQF44	AQF34S	AQF34D	EP-SEEP	
Grouping	**Analyte**				
WATER					
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Total (mg/L)	0.0013	0.0025	0.0024	0.0029	
	Magnesium (Mg)-Total (mg/L)	0.993	9.88	10.1	13.0	
	Manganese (Mn)-Total (mg/L)	0.0145	0.0365	0.0428	0.0160	
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Total (mg/L)	0.000253	0.000465	0.000443	0.000366	
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	0.00070	0.00052	
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	
	Potassium (K)-Total (mg/L)	0.562	2.71	2.73	3.49	
	Rubidium (Rb)-Total (mg/L)	0.00106	0.00240	0.00249	0.00312	
	Selenium (Se)-Total (mg/L)	0.000065	<0.000050	0.000065	<0.000050	
	Silicon (Si)-Total (mg/L)	2.39	3.42	3.46	3.70	
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Total (mg/L)	1.21	5.98	5.90	7.49	
	Strontium (Sr)-Total (mg/L)	0.0137	0.0798	0.0789	0.105	
	Sulfur (S)-Total (mg/L)	<0.50	14.5	14.6	21.0	
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Tin (Sn)-Total (mg/L)	<0.00010	0.00025	0.00294	0.00033	
	Titanium (Ti)-Total (mg/L)	0.00180	0.00051	0.00047	0.00101	
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Uranium (U)-Total (mg/L)	0.000030	0.000509	0.000480	0.00104	
	Vanadium (V)-Total (mg/L)	<0.00050	0.00056	<0.00050	<0.00050	
	Zinc (Zn)-Total (mg/L)	<0.0030	0.0059	<0.0030	<0.0030	
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	LAB	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0294	0.0023	0.0055	0.0052	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00019	0.00117	0.00122	0.00182	
	Barium (Ba)-Dissolved (mg/L)	0.00655	0.0152	0.0159	0.0123	
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	0.019	0.013	0.022	
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Calcium (Ca)-Dissolved (mg/L)	3.35	38.2	38.5	50.4	
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	0.000051	0.000051	0.000152	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2735222-1	L2735222-2	L2735222-3	L2735222-4	
Description	W	W	W	W	
Sampled Date	29-SEP-22	29-SEP-22	29-SEP-22	29-SEP-22	
Sampled Time	09:00	12:45	12:48	13:13	
Client ID	AQF44	AQF34S	AQF34D	EP-SEEP	
Grouping / **Analyte**					
WATER					
Dissolved Metals Chromium (Cr)-Dissolved (mg/L)	0.00012	<0.00010	<0.00010	<0.00010	
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Copper (Cu)-Dissolved (mg/L)	0.00031	0.00199 RRV	0.00182 RRV	0.00173	
Iron (Fe)-Dissolved (mg/L)	0.117	0.013	0.020	0.031	
Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000053	0.000076	<0.000050	
Lithium (Li)-Dissolved (mg/L)	0.0011	0.0025	0.0025	0.0028	
Magnesium (Mg)-Dissolved (mg/L)	0.936	10.4	10.3	13.4	
Manganese (Mn)-Dissolved (mg/L)	0.00498	0.00084	0.00905	0.00414	
Molybdenum (Mo)-Dissolved (mg/L)	0.000070	0.000378	0.000342	0.000272	
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	
Potassium (K)-Dissolved (mg/L)	0.545	2.66	2.70	3.38	
Rubidium (Rb)-Dissolved (mg/L)	0.00096	0.00232	0.00247	0.00299	
Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000093	0.000079	<0.000050	
Silicon (Si)-Dissolved (mg/L)	2.01	3.07	3.16	3.35	
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium (Na)-Dissolved (mg/L)	1.09	6.03	6.18	7.85	
Strontium (Sr)-Dissolved (mg/L)	0.0113	0.0772	0.0759	0.102	
Sulfur (S)-Dissolved (mg/L)	0.67	12.9	12.8	19.1	
Tellurium (Te)-Dissolved (mg/L)	<0.00020	0.00027	<0.00020	<0.00020	
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00026	<0.00010	
Titanium (Ti)-Dissolved (mg/L)	0.00040	<0.00030	<0.00030	<0.00030	
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Uranium (U)-Dissolved (mg/L)	0.000024	0.000481	0.000472	0.000939	
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0018	0.0028	<0.0010	
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Speciated Metals Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Strontium (Sr)-Dissolved	B	L2735222-1, -2, -3, -4
Matrix Spike	Dissolved Organic Carbon	MS-B	L2735222-2
Matrix Spike	Boron (B)-Total	MS-B	L2735222-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Total	MS-B	L2735222-1, -2, -3, -4
Matrix Spike	Lithium (Li)-Total	MS-B	L2735222-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2735222-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Total	MS-B	L2735222-1, -2, -3, -4
Matrix Spike	Potassium (K)-Total	MS-B	L2735222-1, -2, -3, -4
Matrix Spike	Silicon (Si)-Total	MS-B	L2735222-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Total	MS-B	L2735222-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Total	MS-B	L2735222-1, -2, -3, -4
Matrix Spike	Sulfur (S)-Total	MS-B	L2735222-1, -2, -3, -4
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L2735222-1, -2, -3
Matrix Spike	Ammonia, Total (as N)	MS-B	L2735222-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-WT	Water	Acidity (as CaCO3)	APHA 2310 B - Potentiometric Titration
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BR-IC-N-WP	Water	Bromide in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

C-TOC-HTC-WP	Water	Total Organic Carbon by Combustion	APHA 5310 B-WP

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-L-CFA-WT	Water	Low Level Free Cyanide in water by CFA	ASTM 7237

Reference Information

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-WT	Water	Low Level Total Cyanide in water by CFA	ISO 14403-2:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, however it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-WT	Water	Low level WAD Cyanide in water by CFA	APHA 4500CN I-Weak acid Dist Colorimet

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

CR-CR6-PWQO-IC-WT	Water	Chromium +6	EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-T-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-D-CCMS-WP	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-TOTKJ-WP	Water	Total Kjeldahl Nitrogen	APHA 4500 NorgD (modified)

Aqueous samples are digested in a block digester with sulfuric acid and copper sulfate as a catalyst. Total Kjeldahl Nitrogen is then analyzed using a discrete analyzer with colorimetric detection.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP	Water	Nitrate+Nitrite	CALCULATION

Reference Information

NO2-L-IC-N-WP	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-LR-WP	Water	Total Suspended Solids	APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 Œ 105°C.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Alamos Gold Inc.
C/O Stantec Consulting 500 - 311 Portage Avenue
Winnipeg MB R3B 2B9
Contact: KAREN MATHERS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-WT	**Water**							
Batch R5871283								
WG3767038-2 LCS								
Acidity (as CaCO3)			103.9		%		85-115	08-OCT-22
WG3767038-1 MB								
Acidity (as CaCO3)			<2.0		mg/L		3	08-OCT-22
ALK-TITR-WP	**Water**							
Batch R5875080								
WG3768371-20 LCS								
Alkalinity, Total (as CaCO3)			101.0		%		85-115	17-OCT-22
WG3768371-9 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-OCT-22
BR-IC-N-WP	**Water**							
Batch R5869197								
WG3766212-11 DUP		**L2735222-1**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	03-OCT-22
WG3766212-10 LCS								
Bromide (Br)			94.9		%		85-115	03-OCT-22
WG3766212-9 MB								
Bromide (Br)			<0.10		mg/L		0.1	03-OCT-22
WG3766212-12 MS		**L2735222-1**						
Bromide (Br)			110.4		%		75-125	03-OCT-22
Batch R5869577								
WG3766353-3 DUP		**L2735222-3**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	04-OCT-22
WG3766353-2 LCS								
Bromide (Br)			100.7		%		85-115	04-OCT-22
WG3766353-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	04-OCT-22
WG3766353-4 MS		**L2735222-3**						
Bromide (Br)			99.96		%		75-125	04-OCT-22
C-DOC-HTC-WP	**Water**							
Batch R5876179								
WG3768683-2 LCS								
Dissolved Organic Carbon			103.7		%		80-120	17-OCT-22
WG3768683-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-OCT-22
WG3768683-4 MS		**L2735222-2**						
Dissolved Organic Carbon			N/A	MS-B	%		-	17-OCT-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DOC-HTC-WP	**Water**							
Batch R5879659								
WG3769597-2 LCS								
Dissolved Organic Carbon			104.1		%		80-120	21-OCT-22
WG3769597-6 LCS								
Dissolved Organic Carbon			100.4		%		80-120	21-OCT-22
WG3769597-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-OCT-22
WG3769597-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-OCT-22
Batch R5881436								
WG3770001-2 LCS								
Dissolved Organic Carbon			94.1		%		80-120	26-OCT-22
WG3770001-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-OCT-22
C-TOC-HTC-WP	**Water**							
Batch R5876177								
WG3768692-3 DUP		**L2735222-3**						
Total Organic Carbon		11.9	11.7		mg/L	2.1	20	17-OCT-22
WG3768692-2 LCS								
Total Organic Carbon			103.8		%		80-120	17-OCT-22
WG3768692-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	17-OCT-22
WG3768692-4 MS		**L2735222-4**						
Total Organic Carbon			97.6		%		70-130	17-OCT-22
Batch R5879658								
WG3769603-2 LCS								
Total Organic Carbon			104.0		%		80-120	21-OCT-22
WG3769603-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	21-OCT-22
CL-L-IC-N-WP	**Water**							
Batch R5869197								
WG3766212-11 DUP		**L2735222-1**						
Chloride (Cl)		0.24	0.21		mg/L	14	20	03-OCT-22
WG3766212-10 LCS								
Chloride (Cl)			99.98		%		90-110	03-OCT-22
WG3766212-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	03-OCT-22
WG3766212-12 MS		**L2735222-1**						
Chloride (Cl)			115.8		%		75-125	03-OCT-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-L-IC-N-WP	**Water**							
Batch R5869577								
WG3766353-3 DUP		**L2735222-3**						
Chloride (Cl)		0.90	0.91		mg/L	0.4	20	04-OCT-22
WG3766353-2 LCS								
Chloride (Cl)			101.3		%		90-110	04-OCT-22
WG3766353-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	04-OCT-22
WG3766353-4 MS		**L2735222-3**						
Chloride (Cl)			100.0		%		75-125	04-OCT-22
CN-FREE-L-CFA-WT	**Water**							
Batch R5870297								
WG3766716-7 LCS								
Cyanide, Free			95.6		%		80-120	05-OCT-22
WG3766716-6 MB								
Cyanide, Free			<0.0010		mg/L		0.001	05-OCT-22
CN-T-L-CFA-WT	**Water**							
Batch R5870297								
WG3766716-7 LCS								
Cyanide, Total			93.7		%		80-120	05-OCT-22
WG3766716-6 MB								
Cyanide, Total			<0.0010		mg/L		0.001	05-OCT-22
CN-WAD-L-CFA-WT	**Water**							
Batch R5870297								
WG3766716-7 LCS								
Cyanide, Weak Acid Diss			101.3		%		80-120	05-OCT-22
WG3766716-6 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	05-OCT-22
CR-CR6-PWQO-IC-WT	**Water**							
Batch R5870684								
WG3767070-2 LCS								
Chromium, Hexavalent			99.1		%		80-120	06-OCT-22
WG3767070-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	06-OCT-22
F-IC-N-WP	**Water**							
Batch R5869197								
WG3766212-11 DUP		**L2735222-1**						
Fluoride (F)		0.061	0.060		mg/L	1.5	20	03-OCT-22
WG3766212-10 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP	**Water**							
Batch R5869197								
WG3766212-10 LCS								
Fluoride (F)			94.2		%		90-110	03-OCT-22
WG3766212-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	03-OCT-22
WG3766212-12 MS		**L2735222-1**						
Fluoride (F)			109.7		%		75-125	03-OCT-22
Batch R5869577								
WG3766353-3 DUP		**L2735222-3**						
Fluoride (F)		0.080	0.078		mg/L	1.5	20	04-OCT-22
WG3766353-2 LCS								
Fluoride (F)			105.5		%		90-110	04-OCT-22
WG3766353-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	04-OCT-22
WG3766353-4 MS		**L2735222-3**						
Fluoride (F)			104.2		%		75-125	04-OCT-22
HG-T-CVAA-WP	**Water**							
Batch R5872102								
WG3767516-2 LCS								
Mercury (Hg)-Total			103.7		%		80-120	11-OCT-22
WG3767516-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	11-OCT-22
WG3767516-4 MS		**L2735222-1**						
Mercury (Hg)-Total			114.1		%		70-130	11-OCT-22
MET-D-CCMS-WP	**Water**							
Batch R5873038								
WG3767393-4 DUP		**L2735222-1**						
Aluminum (Al)-Dissolved		0.0294	0.0294		mg/L	0.2	20	11-OCT-22
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-OCT-22
Arsenic (As)-Dissolved		0.00019	0.00014	J	mg/L	0.00004	0.0002	11-OCT-22
Barium (Ba)-Dissolved		0.00655	0.00660		mg/L	0.8	20	11-OCT-22
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-OCT-22
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-OCT-22
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	11-OCT-22
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	11-OCT-22
Calcium (Ca)-Dissolved		3.35	3.32		mg/L	0.7	20	11-OCT-22
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-OCT-22
Chromium (Cr)-Dissolved		0.00012	0.00014		mg/L	14	20	11-OCT-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5873038								
WG3767393-4 DUP		**L2735222-1**						
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-OCT-22
Copper (Cu)-Dissolved		0.00031	0.00032		mg/L	2.4	20	11-OCT-22
Iron (Fe)-Dissolved		0.117	0.117		mg/L	0.3	20	11-OCT-22
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-OCT-22
Lithium (Li)-Dissolved		0.0011	0.0011		mg/L	0.3	20	11-OCT-22
Magnesium (Mg)-Dissolved		0.936	0.923		mg/L	1.4	20	11-OCT-22
Manganese (Mn)-Dissolved		0.00498	0.00485		mg/L	2.7	20	11-OCT-22
Molybdenum (Mo)-Dissolved		0.000070	0.000066		mg/L	5.7	20	11-OCT-22
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	11-OCT-22
Phosphorus (P)-Dissolved		<0.030	<0.030	RPD-NA	mg/L	N/A	20	11-OCT-22
Potassium (K)-Dissolved		0.545	0.537		mg/L	1.5	20	11-OCT-22
Rubidium (Rb)-Dissolved		0.00096	0.00088		mg/L	8.9	20	11-OCT-22
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-OCT-22
Silicon (Si)-Dissolved		2.01	2.01		mg/L	0.1	20	11-OCT-22
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-OCT-22
Sodium (Na)-Dissolved		1.09	1.07		mg/L	1.5	20	11-OCT-22
Strontium (Sr)-Dissolved		0.0113	0.0113		mg/L	0.1	20	11-OCT-22
Sulfur (S)-Dissolved		0.67	0.55		mg/L	19	20	11-OCT-22
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	11-OCT-22
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-OCT-22
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-OCT-22
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-OCT-22
Titanium (Ti)-Dissolved		0.00040	0.00042		mg/L	4.1	20	11-OCT-22
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-OCT-22
Uranium (U)-Dissolved		0.000024	0.000025		mg/L	5.4	20	11-OCT-22
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	11-OCT-22
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	11-OCT-22
Zirconium (Zr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	11-OCT-22
WG3767393-2 LCS								
Aluminum (Al)-Dissolved			107.2		%		80-120	11-OCT-22
Antimony (Sb)-Dissolved			87.5		%		80-120	11-OCT-22
Arsenic (As)-Dissolved			99.7		%		80-120	11-OCT-22
Barium (Ba)-Dissolved			104.3		%		80-120	11-OCT-22
Beryllium (Be)-Dissolved			86.4		%		80-120	11-OCT-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5873038								
WG3767393-2 LCS								
Bismuth (Bi)-Dissolved			109.7		%		80-120	11-OCT-22
Boron (B)-Dissolved			92.1		%		80-120	11-OCT-22
Cadmium (Cd)-Dissolved			98.9		%		80-120	11-OCT-22
Calcium (Ca)-Dissolved			105.1		%		80-120	11-OCT-22
Cesium (Cs)-Dissolved			89.5		%		80-120	11-OCT-22
Chromium (Cr)-Dissolved			99.9		%		80-120	11-OCT-22
Cobalt (Co)-Dissolved			99.1		%		80-120	11-OCT-22
Copper (Cu)-Dissolved			97.4		%		80-120	11-OCT-22
Iron (Fe)-Dissolved			97.4		%		80-120	11-OCT-22
Lead (Pb)-Dissolved			92.9		%		80-120	11-OCT-22
Lithium (Li)-Dissolved			98.0		%		80-120	11-OCT-22
Magnesium (Mg)-Dissolved			106.1		%		80-120	11-OCT-22
Manganese (Mn)-Dissolved			97.4		%		80-120	11-OCT-22
Molybdenum (Mo)-Dissolved			86.0		%		80-120	11-OCT-22
Nickel (Ni)-Dissolved			97.1		%		80-120	11-OCT-22
Phosphorus (P)-Dissolved			98.9		%		80-120	11-OCT-22
Potassium (K)-Dissolved			101.7		%		80-120	11-OCT-22
Rubidium (Rb)-Dissolved			99.8		%		80-120	11-OCT-22
Selenium (Se)-Dissolved			95.6		%		80-120	11-OCT-22
Silicon (Si)-Dissolved			93.4		%		80-120	11-OCT-22
Silver (Ag)-Dissolved			87.1		%		80-120	11-OCT-22
Sodium (Na)-Dissolved			114.7		%		80-120	11-OCT-22
Strontium (Sr)-Dissolved			90.4		%		80-120	11-OCT-22
Sulfur (S)-Dissolved			100.9		%		80-120	11-OCT-22
Tellurium (Te)-Dissolved			83.6		%		80-120	11-OCT-22
Thallium (Tl)-Dissolved			89.5		%		80-120	11-OCT-22
Thorium (Th)-Dissolved			92.2		%		80-120	11-OCT-22
Tin (Sn)-Dissolved			86.5		%		80-120	11-OCT-22
Titanium (Ti)-Dissolved			99.0		%		80-120	11-OCT-22
Tungsten (W)-Dissolved			88.2		%		80-120	11-OCT-22
Uranium (U)-Dissolved			98.8		%		80-120	11-OCT-22
Vanadium (V)-Dissolved			102.4		%		80-120	11-OCT-22
Zinc (Zn)-Dissolved			100.3		%		80-120	11-OCT-22
Zirconium (Zr)-Dissolved			86.4		%		80-120	11-OCT-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5873038								
WG3767393-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-OCT-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-OCT-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-OCT-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-OCT-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	11-OCT-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-OCT-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-OCT-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	11-OCT-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-OCT-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	11-OCT-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-OCT-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-OCT-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-OCT-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-OCT-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-OCT-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-OCT-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-OCT-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-OCT-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-OCT-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-OCT-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	11-OCT-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-OCT-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	11-OCT-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-OCT-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-OCT-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-OCT-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-OCT-22
Strontium (Sr)-Dissolved			0.00013	B	mg/L		0.0001	11-OCT-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	11-OCT-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	11-OCT-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-OCT-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	11-OCT-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-OCT-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-OCT-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5873038								
WG3767393-1 MB								
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	11-OCT-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-OCT-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-OCT-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-OCT-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	11-OCT-22
WG3767393-5 MS		**L2735222-1**						
Aluminum (Al)-Dissolved			93.6		%		70-130	11-OCT-22
Antimony (Sb)-Dissolved			84.8		%		70-130	11-OCT-22
Arsenic (As)-Dissolved			95.0		%		70-130	11-OCT-22
Barium (Ba)-Dissolved			98.9		%		70-130	11-OCT-22
Beryllium (Be)-Dissolved			85.1		%		70-130	11-OCT-22
Bismuth (Bi)-Dissolved			86.9		%		70-130	11-OCT-22
Boron (B)-Dissolved			88.2		%		70-130	11-OCT-22
Cadmium (Cd)-Dissolved			94.7		%		70-130	11-OCT-22
Calcium (Ca)-Dissolved			100.7		%		70-130	11-OCT-22
Cesium (Cs)-Dissolved			85.9		%		70-130	11-OCT-22
Chromium (Cr)-Dissolved			93.8		%		70-130	11-OCT-22
Cobalt (Co)-Dissolved			94.2		%		70-130	11-OCT-22
Copper (Cu)-Dissolved			92.1		%		70-130	11-OCT-22
Iron (Fe)-Dissolved			109.5		%		70-130	11-OCT-22
Lead (Pb)-Dissolved			87.9		%		70-130	11-OCT-22
Lithium (Li)-Dissolved			104.1		%		70-130	11-OCT-22
Magnesium (Mg)-Dissolved			93.9		%		70-130	11-OCT-22
Manganese (Mn)-Dissolved			92.1		%		70-130	11-OCT-22
Molybdenum (Mo)-Dissolved			80.5		%		70-130	11-OCT-22
Nickel (Ni)-Dissolved			93.1		%		70-130	11-OCT-22
Phosphorus (P)-Dissolved			90.6		%		70-130	11-OCT-22
Potassium (K)-Dissolved			111.9		%		70-130	11-OCT-22
Rubidium (Rb)-Dissolved			93.7		%		70-130	11-OCT-22
Selenium (Se)-Dissolved			94.9		%		70-130	11-OCT-22
Silicon (Si)-Dissolved			87.3		%		70-130	11-OCT-22
Silver (Ag)-Dissolved			83.1		%		70-130	11-OCT-22
Sodium (Na)-Dissolved			115.5		%		70-130	11-OCT-22
Strontium (Sr)-Dissolved			106.1		%		70-130	11-OCT-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5873038								
WG3767393-5 MS		**L2735222-1**						
Sulfur (S)-Dissolved			87.1		%		70-130	11-OCT-22
Tellurium (Te)-Dissolved			75.6		%		70-130	11-OCT-22
Thallium (Tl)-Dissolved			83.5		%		70-130	11-OCT-22
Thorium (Th)-Dissolved			98.5		%		70-130	11-OCT-22
Tin (Sn)-Dissolved			82.1		%		70-130	11-OCT-22
Titanium (Ti)-Dissolved			93.4		%		70-130	11-OCT-22
Tungsten (W)-Dissolved			82.7		%		70-130	11-OCT-22
Uranium (U)-Dissolved			94.0		%		70-130	11-OCT-22
Vanadium (V)-Dissolved			97.1		%		70-130	11-OCT-22
Zinc (Zn)-Dissolved			92.0		%		70-130	11-OCT-22
Zirconium (Zr)-Dissolved			97.2		%		70-130	11-OCT-22
MET-T-CCMS-WP	**Water**							
Batch R5871957								
WG3766824-2 LCS								
Aluminum (Al)-Total			99.6		%		80-120	07-OCT-22
Antimony (Sb)-Total			106.6		%		80-120	07-OCT-22
Arsenic (As)-Total			104.5		%		80-120	07-OCT-22
Barium (Ba)-Total			101.1		%		80-120	07-OCT-22
Beryllium (Be)-Total			99.0		%		80-120	07-OCT-22
Bismuth (Bi)-Total			107.0		%		80-120	07-OCT-22
Boron (B)-Total			94.1		%		80-120	07-OCT-22
Cadmium (Cd)-Total			103.7		%		80-120	07-OCT-22
Calcium (Ca)-Total			98.7		%		80-120	07-OCT-22
Cesium (Cs)-Total			103.9		%		80-120	07-OCT-22
Chromium (Cr)-Total			100.7		%		80-120	07-OCT-22
Cobalt (Co)-Total			102.0		%		80-120	07-OCT-22
Copper (Cu)-Total			101.7		%		80-120	07-OCT-22
Iron (Fe)-Total			99.9		%		80-120	07-OCT-22
Lead (Pb)-Total			100.6		%		80-120	07-OCT-22
Lithium (Li)-Total			94.4		%		80-120	07-OCT-22
Magnesium (Mg)-Total			101.0		%		80-120	07-OCT-22
Manganese (Mn)-Total			98.4		%		80-120	07-OCT-22
Molybdenum (Mo)-Total			100.4		%		80-120	07-OCT-22
Nickel (Ni)-Total			102.9		%		80-120	07-OCT-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5871957								
WG3766824-2 LCS								
Potassium (K)-Total			97.9		%		80-120	07-OCT-22
Phosphorus (P)-Total			104.9		%		80-120	07-OCT-22
Rubidium (Rb)-Total			95.3		%		80-120	07-OCT-22
Selenium (Se)-Total			100.2		%		80-120	07-OCT-22
Silicon (Si)-Total			102.6		%		80-120	07-OCT-22
Silver (Ag)-Total			101.3		%		80-120	07-OCT-22
Sodium (Na)-Total			104.0		%		80-120	07-OCT-22
Strontium (Sr)-Total			101.0		%		80-120	07-OCT-22
Sulfur (S)-Total			108.0		%		80-120	07-OCT-22
Tellurium (Te)-Total			98.9		%		80-120	07-OCT-22
Thallium (Tl)-Total			99.8		%		80-120	07-OCT-22
Thorium (Th)-Total			96.6		%		80-120	07-OCT-22
Tin (Sn)-Total			98.4		%		80-120	07-OCT-22
Titanium (Ti)-Total			95.9		%		80-120	07-OCT-22
Tungsten (W)-Total			96.6		%		80-120	07-OCT-22
Uranium (U)-Total			97.8		%		80-120	07-OCT-22
Vanadium (V)-Total			101.0		%		80-120	07-OCT-22
Zinc (Zn)-Total			101.0		%		80-120	07-OCT-22
Zirconium (Zr)-Total			91.7		%		80-120	07-OCT-22
WG3766824-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	07-OCT-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	07-OCT-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	07-OCT-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	07-OCT-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	07-OCT-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	07-OCT-22
Boron (B)-Total			<0.010		mg/L		0.01	07-OCT-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	07-OCT-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	07-OCT-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	07-OCT-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	07-OCT-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	07-OCT-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	07-OCT-22
Iron (Fe)-Total			<0.010		mg/L		0.01	07-OCT-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5871957								
WG3766824-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	07-OCT-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	07-OCT-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	07-OCT-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	07-OCT-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	07-OCT-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	07-OCT-22
Potassium (K)-Total			<0.050		mg/L		0.05	07-OCT-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	07-OCT-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	07-OCT-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	07-OCT-22
Silicon (Si)-Total			<0.10		mg/L		0.1	07-OCT-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	07-OCT-22
Sodium (Na)-Total			<0.050		mg/L		0.05	07-OCT-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	07-OCT-22
Sulfur (S)-Total			<0.50		mg/L		0.5	07-OCT-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	07-OCT-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	07-OCT-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	07-OCT-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	07-OCT-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	07-OCT-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	07-OCT-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	07-OCT-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	07-OCT-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	07-OCT-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	07-OCT-22
N-TOTKJ-WP	**Water**							
Batch R5874539								
WG3767822-3 DUP		**L2735222-4**						
Total Kjeldahl Nitrogen		0.25	<0.20	RPD-NA	mg/L	N/A	20	14-OCT-22
WG3767822-2 LCS								
Total Kjeldahl Nitrogen			105.9		%		75-125	14-OCT-22
WG3767822-6 LCS								
Total Kjeldahl Nitrogen			99.6		%		75-125	14-OCT-22
WG3767822-1 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	14-OCT-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
N-TOTKJ-WP	**Water**							
Batch R5874539								
WG3767822-5 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	14-OCT-22
WG3767822-4 MS		**L2735222-4**						
Total Kjeldahl Nitrogen			107.7		%		70-130	14-OCT-22
Batch R5879016								
WG3769129-14 LCS								
Total Kjeldahl Nitrogen			102.6		%		75-125	21-OCT-22
WG3769129-13 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	21-OCT-22
NH3-COL-WP	**Water**							
Batch R5876472								
WG3768784-10 LCS								
Ammonia, Total (as N)			100.4		%		85-115	18-OCT-22
WG3768784-9 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	18-OCT-22
NO2-L-IC-N-WP	**Water**							
Batch R5869197								
WG3766212-11 DUP		**L2735222-1**						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-22
WG3766212-10 LCS								
Nitrite (as N)			94.8		%		90-110	03-OCT-22
WG3766212-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	03-OCT-22
WG3766212-12 MS		**L2735222-1**						
Nitrite (as N)			108.6		%		75-125	03-OCT-22
Batch R5869577								
WG3766353-3 DUP		**L2735222-3**						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-OCT-22
WG3766353-2 LCS								
Nitrite (as N)			98.8		%		90-110	04-OCT-22
WG3766353-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	04-OCT-22
WG3766353-4 MS		**L2735222-3**						
Nitrite (as N)			98.0		%		75-125	04-OCT-22
NO3-L-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-WP	**Water**							
Batch R5869197								
WG3766212-11 DUP		**L2735222-1**						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-OCT-22
WG3766212-10 LCS								
Nitrate (as N)			101.6		%		90-110	03-OCT-22
WG3766212-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	03-OCT-22
WG3766212-12 MS		**L2735222-1**						
Nitrate (as N)			115.1		%		75-125	03-OCT-22
Batch R5869577								
WG3766353-3 DUP		**L2735222-3**						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-OCT-22
WG3766353-2 LCS								
Nitrate (as N)			101.9		%		90-110	04-OCT-22
WG3766353-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	04-OCT-22
WG3766353-4 MS		**L2735222-3**						
Nitrate (as N)			100.5		%		75-125	04-OCT-22
P-T-COL-WP	**Water**							
Batch R5870756								
WG3766897-26 LCS								
Phosphorus (P)-Total			95.8		%		80-120	07-OCT-22
WG3766897-25 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	07-OCT-22
Batch R5872041								
WG3767184-10 LCS								
Phosphorus (P)-Total			95.5		%		80-120	11-OCT-22
WG3767184-9 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	11-OCT-22
SO4-IC-N-WP	**Water**							
Batch R5869197								
WG3766212-11 DUP		**L2735222-1**						
Sulfate (SO4)		0.47	0.44		mg/L	5.8	20	03-OCT-22
WG3766212-10 LCS								
Sulfate (SO4)			102.8		%		90-110	03-OCT-22
WG3766212-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	03-OCT-22
WG3766212-12 MS		**L2735222-1**						
Sulfate (SO4)			119.3		%		75-125	03-OCT-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP	**Water**							
Batch R5869577								
WG3766353-3 DUP		**L2735222-3**						
Sulfate (SO4)		40.4	40.4		mg/L	0.1	20	04-OCT-22
WG3766353-2 LCS								
Sulfate (SO4)			102.8		%		90-110	04-OCT-22
WG3766353-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	04-OCT-22
WG3766353-4 MS		**L2735222-3**						
Sulfate (SO4)			99.4		%		75-125	04-OCT-22
SOLIDS-TOTSUS-LR-WP	**Water**							
Batch R5870619								
WG3766360-2 LCS								
Total Suspended Solids			99.8		%		85-115	05-OCT-22
WG3766360-1 MB								
Total Suspended Solids			<1.0		mg/L		1	05-OCT-22

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Anions and Nutrients							
Alkalinity, Total (as CaCO3)							
	1	29-SEP-22 09:00	17-OCT-22 13:17	14	18	days	EHT
	2	29-SEP-22 12:45	17-OCT-22 13:17	14	18	days	EHT
	3	29-SEP-22 12:48	17-OCT-22 13:17	14	18	days	EHT
	4	29-SEP-22 13:13	17-OCT-22 13:17	14	18	days	EHT
Nitrate in Water by IC (Low Level)							
	1	29-SEP-22 09:00	03-OCT-22 13:00	3	4	days	EHTR
	2	29-SEP-22 12:45	04-OCT-22 11:00	3	5	days	EHTR
	3	29-SEP-22 12:48	04-OCT-22 11:00	3	5	days	EHTR
	4	29-SEP-22 13:13	04-OCT-22 11:00	3	5	days	EHTR
Nitrite in Water by IC (Low Level)							
	1	29-SEP-22 09:00	03-OCT-22 13:00	3	4	days	EHTR
	2	29-SEP-22 12:45	04-OCT-22 11:00	3	5	days	EHTR
	3	29-SEP-22 12:48	04-OCT-22 11:00	3	5	days	EHTR
	4	29-SEP-22 13:13	04-OCT-22 11:00	3	5	days	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2735222 were received on 03-OCT-22 11:36.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain o

L2735222-COFC

COC Number: 22 -

Page 1 of 1

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Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Report Format / Distribution

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: Karen.Mathers@Stantec.com
Email 2: Brad.Horne@stantec.com
Email 3: Jeremy.Jackson@stantec.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax:
Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	Q88846
Job #:	ALAMOS
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: J.D.

Sampler: BS

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	HG-T-CVAA-WP	SOLIDS-TOTSUS-LR-WP	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	CN-T-L, CN-FREE-L, CN-WAD-L	CR-CR6-PWOO-IC-WT	ACY-TITR-TB	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	[redacted] BS	[redacted]	[redacted]																		
	[redacted] BS	[redacted]	[redacted]																		
	[redacted]	[redacted]																			
	AQF44	29-09-22	0900	W	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
	AQF34S	"	1245	"	9	"	"	"	"	"	"	"	"	"	"	"	"	"				
	AQF34D	"	1248	"	9	"	"	"	"	"	"	"	"	"	"	"	"	"				
	EP-SEEP	"	1313	"	9	"	"	"	"	"	"	"	"	"	"	"	"	"				

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
9.6							

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
B. Lynd	Oct. 3/22	

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
[signature]	OCT 03 2022	11:36

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Alamos Gold Inc.
ATTN: KAREN MATHERS
C/O Stantec Consulting
500 - 311 Portage Avenue
Winnipeg MB R3B 2B9

Date Received: 31-OCT-22
Report Date: 25-NOV-22 08:59 (MT)
Version: FINAL

Client Phone: 204-924-5735

Certificate of Analysis

Lab Work Order #: L2738661

Project P.O. #: NOT SUBMITTED
Job Reference: ALAMOS
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2738661-1 W 27-OCT-22 09:57 AQF45	L2738661-2 W 27-OCT-22 05:00 AQF40	L2738661-3 W 28-OCT-22 11:24 AQM71	L2738661-4 W 28-OCT-22 11:53 AQM28	L2738661-5 W 28-OCT-22 12:10 AQM29C
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	12.0	10.7	51.2	21.2	10.1
	Total Suspended Solids (mg/L)	1.2	2.1	1.0	1.7	1.8
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.9	3.0	5.3	2.5	2.4
	Alkalinity, Total (as CaCO3) (mg/L)	11.2	10.5	35.0	10.7	7.8
	Ammonia, Total (as N) (mg/L)	<0.010	<0.010	0.022	<0.010	<0.010
	Bicarbonate (HCO3) (mg/L)	13.7	12.8	42.7	13.1	9.5
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	0.27	0.21	1.00	0.78	0.38
	Fluoride (F) (mg/L)	0.059	0.061	0.035	0.055	0.052
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	0.0183	0.0258	0.0272	<0.0051	0.0065
	Nitrate (as N) (mg/L)	0.0183	0.0258	0.0272	<0.0050	0.0065
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.26	<0.20	<0.20	0.26	<0.20
	Phosphorus (P)-Total (mg/L)	0.0128	0.0167	0.0070	0.0160	0.0155
	Sulfate (SO4) (mg/L)	0.55	0.47	12.7	9.43	2.12
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	9.25	8.98	14.2	12.2	8.51
	Total Organic Carbon (mg/L)	9.26	9.28	14.3	13.4	8.04
Total Metals	Aluminum (Al)-Total (mg/L)	0.0646	0.0662	0.0415	0.202	0.0617
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00020	0.00018	0.00022	0.00026	0.00018
	Barium (Ba)-Total (mg/L)	0.00539 RRV	0.00527 RRV	0.00857	0.00754	0.00562
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	0.0000159	0.0000068
	Calcium (Ca)-Total (mg/L)	3.39	2.96	17.5	6.44	2.91
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00023	0.00019	0.00017	0.00032	0.00014
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00090	0.00016
	Copper (Cu)-Total (mg/L)	<0.00050 RRV	<0.00050 RRV	<0.00050	0.00473	0.00106
	Iron (Fe)-Total (mg/L)	0.234	0.279	0.170	0.855	0.294

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2738661-6 W 28-OCT-22 12:05 AQM72	L2738661-7 W 28-OCT-22 12:53 AQM73	L2738661-8 W 28-OCT-22 13:13 AQM74	L2738661-9 W 28-OCT-22 13:34 AQF7S	L2738661-10 W 28-OCT-22 14:24 AQF38
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	7.23	20.0	12.2	15.2	14.0
	Total Suspended Solids (mg/L)	3.4	214	3460	1.5	12.5
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	4.4	10.4	14.1	2.8	5.0
	Alkalinity, Total (as CaCO3) (mg/L)	6.2	14.2	64.2	16.0	14.5
	Ammonia, Total (as N) (mg/L)	0.017	0.062	0.103	<0.010	<0.010
	Bicarbonate (HCO3) (mg/L)	7.6	17.3	78.3	19.5	17.7
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	0.15	0.47	0.37	0.11	0.20
	Fluoride (F) (mg/L)	0.030	0.046	0.050	0.041	0.044
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	<0.0051	<0.0051	0.0172	0.0139	0.0180
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0172	0.0139	0.0180
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.25	5.65	40.0	0.30	<0.20
	Phosphorus (P)-Total (mg/L)	0.0226	0.717	2.55	0.0134	0.0193
	Sulfate (SO4) (mg/L)	<0.30	<0.30	0.70	0.74	0.88
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	0.0011	0.0038	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	0.0014	0.0059	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	0.0013	0.0035	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	12.9	28.2	24.8	8.61	7.25
	Total Organic Carbon (mg/L)	12.3	40.0	49.5	8.96	7.27
Total Metals	Aluminum (Al)-Total (mg/L)	0.106	0.270	11.0	0.0420	0.210
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	0.00019	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00023	0.00080	0.00482	0.00021	0.00018
	Barium (Ba)-Total (mg/L)	0.00528 RRV	0.0337	0.374	0.00863 RRV	0.00916 RRV
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	0.00049	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	0.000225	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	0.037	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	0.0000352	0.000585	<0.0000050	0.0000118
	Calcium (Ca)-Total (mg/L)	2.39	7.42	38.5	4.03	3.87
	Cesium (Cs)-Total (mg/L)	0.000011	0.000085	0.000643	<0.000010	0.000012
	Chromium (Cr)-Total (mg/L)	0.00030	0.00061	0.00989	0.00026	0.00046
	Cobalt (Co)-Total (mg/L)	0.00021	0.00056	0.0200	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050 RRV	0.00116	0.0389	<0.00050 RRV	0.00076 RRV
	Iron (Fe)-Total (mg/L)	2.75	1.98	36.2	0.084	0.219

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2738661-11 W 28-OCT-22 15:04 AQF41	L2738661-12 W 28-OCT-22 15:22 AQF42	L2738661-13 W 28-OCT-22 15:40 AQF43	L2738661-14 W 28-OCT-22 15:56 AQF44	L2738661-15 W 28-OCT-22 16:27 AQF46
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	10.7	10.8	10.8	11.6	27.6
	Total Suspended Solids (mg/L)	1.0	<1.0	1.3	1.5	1.5
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.3	3.8	2.3	2.2	5.1
	Alkalinity, Total (as CaCO3) (mg/L)	10.2	10.3	10.1	10.9	28.2
	Ammonia, Total (as N) (mg/L)	<0.010	<0.010	<0.010	<0.010	0.042
	Bicarbonate (HCO3) (mg/L)	12.4	12.6	12.3	13.3	34.4
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	0.20	0.21	0.20	0.20	0.25
	Fluoride (F) (mg/L)	0.062	0.062	0.063	0.063	0.044
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	0.0189	0.0186	0.0196	0.0191	0.0374
	Nitrate (as N) (mg/L)	0.0189	0.0186	0.0196	0.0191	0.0374
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.26	0.26	<0.20	<0.20	1.85
	Phosphorus (P)-Total (mg/L)	0.0153	0.0151	0.0145	0.0182	0.119
	Sulfate (SO4) (mg/L)	0.46	0.47	0.46	0.52	0.47
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0011
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	9.18	9.05	8.90	9.01	15.3
	Total Organic Carbon (mg/L)	9.32	9.99	9.37	9.17	13.1
Total Metals	Aluminum (Al)-Total (mg/L)	0.0385	0.0420	0.0671	0.109	0.0281
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00019	0.00019	0.00019	0.00020	0.00027
	Barium (Ba)-Total (mg/L)	0.00548	0.00539	0.00537 RRV	0.00652	0.00854 RRV
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Total (mg/L)	3.08	3.05	3.13	3.44	8.83
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	0.000013	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00017	0.00014	0.00023	0.00033	0.00013
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050 RRV	<0.00050	<0.00050 RRV
	Iron (Fe)-Total (mg/L)	0.232	0.234	0.259	0.354	0.078

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2738661-16	L2738661-17	L2738661-18		
Description	W	W	W		
Sampled Date	29-OCT-22	28-OCT-22	28-OCT-22		
Sampled Time	08:07				
Client ID	FIELD BLANK	QC-01	TRIP BLANK		
Grouping / **Analyte**					
WATER					
Physical Tests Hardness (as CaCO3) (mg/L)	<0.20	9.69	<0.20		
Total Suspended Solids (mg/L)	<1.0	2.1	<1.0		
Anions and Nutrients Acidity (as CaCO3) (mg/L)	<2.0	2.4	2.1		
Alkalinity, Total (as CaCO3) (mg/L)	<1.0	7.7	<1.0		
Ammonia, Total (as N) (mg/L)	<0.010	<0.010	0.011		
Bicarbonate (HCO3) (mg/L)	<1.2	9.4	<1.2		
Bromide (Br) (mg/L)	<0.10	<0.10	<0.10		
Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60		
Chloride (Cl) (mg/L)	<0.10	0.38	<0.10		
Fluoride (F) (mg/L)	<0.020	0.052	<0.020		
Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34		
Nitrate and Nitrite as N (mg/L)	<0.0051	0.0060	<0.0051		
Nitrate (as N) (mg/L)	<0.0050	0.0060	<0.0050		
Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010		
Total Kjeldahl Nitrogen (mg/L)	<0.20	0.22	<0.20		
Phosphorus (P)-Total (mg/L)	<0.0010	0.0159	<0.0010		
Sulfate (SO4) (mg/L)	<0.30	2.13	<0.30		
Cyanides Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010		
Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010		
Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010		
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	<0.50	8.66	<0.50		
Total Organic Carbon (mg/L)	<0.50	8.61	<0.50		
Total Metals Aluminum (Al)-Total (mg/L)	<0.0030	0.0589	<0.0030		
Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
Arsenic (As)-Total (mg/L)	<0.00010	0.00016	<0.00010		
Barium (Ba)-Total (mg/L)	<0.00010	0.00577 RRV	<0.00010		
Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010		
Cadmium (Cd)-Total (mg/L)	<0.0000050	0.0000079	<0.0000050		
Calcium (Ca)-Total (mg/L)	<0.050	2.97	<0.050		
Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
Chromium (Cr)-Total (mg/L)	0.00019	0.00031	0.00014		
Cobalt (Co)-Total (mg/L)	<0.00010	0.00018	<0.00010		
Copper (Cu)-Total (mg/L)	<0.00050	0.00126 RRV	<0.00050		
Iron (Fe)-Total (mg/L)	<0.010	0.304	<0.010		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2738661-1	L2738661-2	L2738661-3	L2738661-4	L2738661-5
Description	W	W	W	W	W
Sampled Date	27-OCT-22	27-OCT-22	28-OCT-22	28-OCT-22	28-OCT-22
Sampled Time	09:57	05:00	11:24	11:53	12:10
Client ID	AQF45	AQF40	AQM71	AQM28	AQM29C
Grouping / **Analyte**					
WATER					
Total Metals Lead (Pb)-Total (mg/L)	<0.000050	0.000064	<0.000050	0.000067	<0.000050
Lithium (Li)-Total (mg/L)	0.0011	0.0011	0.0012	0.0011	0.0011
Magnesium (Mg)-Total (mg/L)	1.01	0.895	1.86	1.46	0.764
Manganese (Mn)-Total (mg/L)	0.0119	0.0173	0.0143	0.0349	0.0142
Mercury (Hg)-Total (ug/L)	0.00113	0.00120	0.00087	0.00121	0.00079
Molybdenum (Mo)-Total (mg/L)	0.000112	0.000142	0.000546	0.000076	<0.000050
Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	0.0734	0.0117
Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
Potassium (K)-Total (mg/L)	0.508	0.498	0.767	0.675	0.514
Rubidium (Rb)-Total (mg/L)	0.00093	0.00100	0.00078	0.00092	0.00093
Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	0.000056	<0.000050
Silicon (Si)-Total (mg/L)	2.48	2.53	5.13	2.95	2.70
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	1.19	1.12	1.75	1.51	1.11
Strontium (Sr)-Total (mg/L)	0.0129	0.0122	0.0250	0.0191	0.0117
Sulfur (S)-Total (mg/L)	<0.50	<0.50	4.70	3.44	0.57
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total (mg/L)	0.00234	0.00210	0.00096	0.00162	0.00089
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	0.000030	0.000032	0.000010	0.000027	0.000023
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	0.0137	<0.0030
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.0207	0.0196	0.0286	0.133	0.0291
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00017	0.00018	0.00020	0.00022	0.00015
Barium (Ba)-Dissolved (mg/L)	0.0113 RRV	0.0113 RRV	0.00852	0.00676	0.00492
Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	0.0000183	<0.0000050
Calcium (Ca)-Dissolved (mg/L)	3.26	2.91	17.6	6.23	2.85

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2738661-6	L2738661-7	L2738661-8	L2738661-9	L2738661-10
Description	W	W	W	W	W
Sampled Date	28-OCT-22	28-OCT-22	28-OCT-22	28-OCT-22	28-OCT-22
Sampled Time	12:05	12:53	13:13	13:34	14:24
Client ID	AQM72	AQM73	AQM74	AQF7S	AQF38
Grouping / **Analyte**					
WATER					
Total Metals Lead (Pb)-Total (mg/L)	0.000062	0.000432	0.0159	<0.000050	<0.000050
Lithium (Li)-Total (mg/L)	<0.0010	0.0020	0.0054	<0.0010	<0.0010
Magnesium (Mg)-Total (mg/L)	0.507	1.34	5.93	1.43	1.01
Manganese (Mn)-Total (mg/L)	0.0357	0.144	5.75	0.00776	0.0190
Mercury (Hg)-Total (ug/L)	0.00091	0.00091	0.0071 DLM	0.00108	0.00270
Molybdenum (Mo)-Total (mg/L)	0.000241	0.000257	0.00909	0.000124	0.00120
Nickel (Ni)-Total (mg/L)	0.00056	0.00127	0.0206	<0.00050	<0.00050
Phosphorus (P)-Total (mg/L)	<0.030	0.461	3.68	<0.030	<0.030
Potassium (K)-Total (mg/L)	0.096	1.18	4.99	0.518	0.546
Rubidium (Rb)-Total (mg/L)	0.00024	0.00273	0.0148	0.00105	0.00098
Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	0.00101	0.000062	<0.000050
Silicon (Si)-Total (mg/L)	3.17	5.31	15.2	1.40	3.31
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	0.000065	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	0.653	1.24	1.70	1.06	1.80
Strontium (Sr)-Total (mg/L)	0.00748	0.0183	0.120	0.0117	0.0126
Sulfur (S)-Total (mg/L)	<0.50	<0.50	6.37	<0.50	<0.50
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	0.00041	<0.00020	<0.00020
Thallium (Tl)-Total (mg/L)	<0.000010	0.000011	0.000135	<0.000010	<0.000010
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	0.00071	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total (mg/L)	0.00432	0.0102	0.217	0.00116	0.00741
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	0.00021	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	0.000014	0.000019	0.00204	0.000012	0.000085
Vanadium (V)-Total (mg/L)	0.00065	0.00081	0.0388	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	0.0030	0.0128	0.0796	<0.0030	<0.0030
Zirconium (Zr)-Total (mg/L)	<0.00020	0.00025	0.00116	<0.00020	<0.00020
Dissolved Metals Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.0430	0.0922	0.210	0.0216	0.0395
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00017	0.00042	0.00025	0.00018	0.00011
Barium (Ba)-Dissolved (mg/L)	0.0107 RRV	0.00596	0.0126	0.0163 RRV	0.0149 RRV
Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000099	0.0000051	<0.0000050	0.0000108
Calcium (Ca)-Dissolved (mg/L)	2.16	6.09	3.45	3.86	3.98

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2738661-11 W 28-OCT-22 15:04 AQF41	L2738661-12 W 28-OCT-22 15:22 AQF42	L2738661-13 W 28-OCT-22 15:40 AQF43	L2738661-14 W 28-OCT-22 15:56 AQF44	L2738661-15 W 28-OCT-22 16:27 AQF46
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050 RRV
	Lithium (Li)-Total (mg/L)	0.0012	0.0011	0.0011	0.0012	<0.0010
	Magnesium (Mg)-Total (mg/L)	0.856	0.908	0.948	1.01	1.92
	Manganese (Mn)-Total (mg/L)	0.0148	0.0146	0.0156	0.0248	0.0358
	Mercury (Hg)-Total (ug/L)	0.00108	0.00112	0.00109	0.00109	0.00235
	Molybdenum (Mo)-Total (mg/L)	0.000093	0.000107	0.000140	0.000113	0.000078
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Total (mg/L)	0.478	0.517	0.538	0.544	1.39
	Rubidium (Rb)-Total (mg/L)	0.00099	0.00102	0.00110	0.00120	0.00128
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	0.000057	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	2.44	2.61	2.67	2.69	1.08
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	1.10	1.08	1.14	1.16	1.19
	Strontium (Sr)-Total (mg/L)	0.0117	0.0125	0.0129	0.0129	0.0148
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00108	0.00110	0.00226	0.00502	0.00068
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	0.000024	0.000037	0.000035	0.000038	<0.000010
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	0.0046	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0190	0.0192	0.0215	0.0237	0.0172
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00015	0.00016	0.00018	0.00017	0.00024
	Barium (Ba)-Dissolved (mg/L)	0.00459	0.00472	0.0109 RRV	0.00532	0.0143 RRV
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	2.88	2.92	2.93	3.14	8.14

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2738661-16	L2738661-17	L2738661-18		
	Description	W	W	W		
	Sampled Date	29-OCT-22	28-OCT-22	28-OCT-22		
	Sampled Time	08:07				
	Client ID	FIELD BLANK	QC-01	TRIP BLANK		
Grouping	**Analyte**					
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
	Lithium (Li)-Total (mg/L)	<0.0010	0.0011	<0.0010		
	Magnesium (Mg)-Total (mg/L)	<0.0050	0.775	<0.0050		
	Manganese (Mn)-Total (mg/L)	<0.00010	0.0145	<0.00010		
	Mercury (Hg)-Total (ug/L)		0.00079			
	Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000057	<0.000050		
	Nickel (Ni)-Total (mg/L)	<0.00050	0.0117	<0.00050		
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030	<0.030		
	Potassium (K)-Total (mg/L)	<0.050	0.532	<0.050		
	Rubidium (Rb)-Total (mg/L)	<0.00020	0.00093	<0.00020		
	Selenium (Se)-Total (mg/L)	<0.000050	0.000051	<0.000050		
	Silicon (Si)-Total (mg/L)	<0.10	2.75	<0.10		
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
	Sodium (Na)-Total (mg/L)	<0.050	1.14	<0.050		
	Strontium (Sr)-Total (mg/L)	<0.00020	0.0122	<0.00020		
	Sulfur (S)-Total (mg/L)	<0.50	0.88	<0.50		
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020		
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	<0.00030	0.00102	<0.00030		
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Uranium (U)-Total (mg/L)	<0.000010	0.000027	<0.000010		
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050		
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030		
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020		
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	LAB		
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0349	0.0026		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00016	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	<0.00010	0.0124 RRV	<0.00010		
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010		
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050		
	Calcium (Ca)-Dissolved (mg/L)	<0.050	2.72	<0.050		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2738661-1 W 27-OCT-22 09:57 AQF45	L2738661-2 W 27-OCT-22 05:00 AQF40	L2738661-3 W 28-OCT-22 11:24 AQM71	L2738661-4 W 28-OCT-22 11:53 AQM28	L2738661-5 W 28-OCT-22 12:10 AQM29C
WATER						
Dissolved Metals	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Dissolved (mg/L)	0.00011	0.00011	0.00012	0.00024	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00062	0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00252 RRV	0.00291 RRV	0.00032	0.00378	0.00087
	Iron (Fe)-Dissolved (mg/L)	0.116	0.118	0.113	0.562	0.143
	Lead (Pb)-Dissolved (mg/L)	0.000059	0.000119	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	0.0010	0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.945	0.822	1.78	1.37	0.720
	Manganese (Mn)-Dissolved (mg/L)	0.00353	0.00292	0.0122	0.0211	0.00675
	Mercury (Hg)-Dissolved (ug/L)	0.00090	0.00085	0.00068	0.00094	0.00057
	Molybdenum (Mo)-Dissolved (mg/L)	0.000096	0.000096	0.000053	0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.0674	0.0106
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.463	0.448	0.714	0.606	0.461
	Rubidium (Rb)-Dissolved (mg/L)	0.00082	0.00092	0.00075	0.00080	0.00083
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000056
	Silicon (Si)-Dissolved (mg/L)	2.28	2.35	4.88	2.69	2.46
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.08	1.03	1.61	1.34	0.995
	Strontium (Sr)-Dissolved (mg/L)	0.0115	0.0111	0.0221	0.0169	0.0104
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	4.30	2.95	0.58
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00040	<0.00030	0.00047	0.00075	<0.00030
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.000023	0.000019	<0.000010	0.000024	0.000020
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0016	0.0028	<0.0010	0.0126	0.0025
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals	Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Methylmercury (as MeHg)-Total (ug/L)	0.000035	0.000037	0.000163	0.000044	0.000026

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2738661-6 W 28-OCT-22 12:05 AQM72	L2738661-7 W 28-OCT-22 12:53 AQM73	L2738661-8 W 28-OCT-22 13:13 AQM74	L2738661-9 W 28-OCT-22 13:34 AQF7S	L2738661-10 W 28-OCT-22 14:24 AQF38
WATER						
Dissolved Metals	Cesium (Cs)-Dissolved (mg/L)	<0.000010	0.000019	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Dissolved (mg/L)	0.00015	0.00026	0.00043	0.00010	0.00025
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00038	0.00017	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00374 RRV	0.00035	0.00344	0.00273 RRV	0.00360 RRV
	Iron (Fe)-Dissolved (mg/L)	0.872	0.848	0.342	0.043	0.019
	Lead (Pb)-Dissolved (mg/L)	0.000137	0.000054	0.000181	0.000121	0.000124
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0015	0.0011	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.447	1.17	0.874	1.36	0.979
	Manganese (Mn)-Dissolved (mg/L)	0.0186	0.111	0.0226	0.00390	0.00296
	Mercury (Hg)-Dissolved (ug/L)	0.00080	0.00100	0.00099	0.00068	0.00143
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	<0.000050	0.000272	0.000087	0.00115
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00059	0.00079	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.030	0.047	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.069	0.702	0.548	0.486	0.494
	Rubidium (Rb)-Dissolved (mg/L)	<0.00020	0.00126	0.00068	0.00095	0.00071
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000056	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	2.85	4.79	4.33	1.38	3.13
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.521	1.17	1.01	0.976	1.07
	Strontium (Sr)-Dissolved (mg/L)	0.00585	0.0114	0.00850	0.0110	0.0119
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00094	0.00118	0.00299	<0.00030	<0.00030
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	<0.000010	<0.000010	0.000024	0.000010	0.000032
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0031	0.0061	0.0039	0.0021	0.0037
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	0.00023	0.00037	<0.00020	<0.00020
Speciated Metals	Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Methylmercury (as MeHg)-Total (ug/L)	0.000084	0.000124	0.000138	0.000067	0.000099

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2738661-11 W 28-OCT-22 15:04 AQF41	L2738661-12 W 28-OCT-22 15:22 AQF42	L2738661-13 W 28-OCT-22 15:40 AQF43	L2738661-14 W 28-OCT-22 15:56 AQF44	L2738661-15 W 28-OCT-22 16:27 AQF46
WATER						
Dissolved Metals	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Dissolved (mg/L)	0.00012	<0.00010	0.00013	0.00013	0.00016
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00031	0.00045	0.00370 RRV	0.00025	0.00295 RRV
	Iron (Fe)-Dissolved (mg/L)	0.119	0.122	0.127	0.127	0.047
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000150	<0.000050	0.000162 RRV
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.841	0.860	0.839	0.913	1.76
	Manganese (Mn)-Dissolved (mg/L)	0.00263	0.00369	0.00393	0.00387	0.0222
	Mercury (Hg)-Dissolved (ug/L)	0.00096	0.00081	0.00081	0.00103	0.00118
	Molybdenum (Mo)-Dissolved (mg/L)	0.000129	0.000101	0.000134	0.000078	0.000079
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.462	0.457	0.483	0.497	1.13
	Rubidium (Rb)-Dissolved (mg/L)	0.00087	0.00090	0.00092	0.00095	0.00112
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	2.30	2.31	2.35	2.30	0.971
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.03	1.03	1.03	1.06	1.06
	Strontium (Sr)-Dissolved (mg/L)	0.0109	0.0111	0.0124	0.0130	0.0145
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	0.00041	<0.00030	0.00034
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.000021	0.000024	0.000025	0.000022	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0011	0.0022	<0.0010	0.0027
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals	Chromium, Hexavalent (ug/L)	<0.50	0.58	<0.50	<0.50	<0.50
	Methylmercury (as MeHg)-Total (ug/L)	0.000154	0.000046	0.000046	0.000135	0.000094

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2738661-16	L2738661-17	L2738661-18		
	Description	W	W	W		
	Sampled Date	29-OCT-22	28-OCT-22	28-OCT-22		
	Sampled Time	08:07				
	Client ID	FIELD BLANK	QC-01	TRIP BLANK		
Grouping	**Analyte**					
WATER						
Dissolved Metals	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00010	<0.00010		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00400 RRV	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.145	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000148	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	<0.0050	0.703	<0.0050		
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00665	<0.00010		
	Mercury (Hg)-Dissolved (ug/L)		0.00071			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000055	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.0104	<0.00050		
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030		
	Potassium (K)-Dissolved (mg/L)	<0.050	0.500	<0.050		
	Rubidium (Rb)-Dissolved (mg/L)	<0.00020	0.00084	<0.00020		
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		
	Silicon (Si)-Dissolved (mg/L)	<0.050	2.50	<0.050		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	<0.050	0.992	<0.050		
	Strontium (Sr)-Dissolved (mg/L)	<0.00010	0.0117	<0.00010		
	Sulfur (S)-Dissolved (mg/L)	<0.50	0.97	<0.50		
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030		
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.000018	<0.000010		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0045	<0.0010		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020		
Speciated Metals	Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50		
	Methylmercury (as MeHg)-Total (ug/L)		0.000024			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Dissolved Organic Carbon	MS-B	L2738661-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L2738661-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L2738661-5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2738661-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L2738661-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2738661-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2738661-13, -14, -15, -16, -17, -18
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2738661-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2738661-13, -14, -15, -16, -17, -18
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2738661-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2738661-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2738661-13, -14, -15, -16, -17, -18
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2738661-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2738661-13, -14, -15, -16, -17, -18
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2738661-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Aluminum (Al)-Total	MS-B	L2738661-11, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L2738661-11, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2738661-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Total	MS-B	L2738661-11, -7, -8, -9
Matrix Spike	Copper (Cu)-Total	MS-B	L2738661-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2738661-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2738661-11, -7, -8, -9
Matrix Spike	Manganese (Mn)-Total	MS-B	L2738661-11, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L2738661-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Total	MS-B	L2738661-1, -2, -3, -4, -5, -6
Matrix Spike	Sulfur (S)-Total	MS-B	L2738661-1, -2, -3, -4, -5, -6

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-TITR-TB	Water	Acidity	APHA 2310 B modified

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated

Reference Information

electrometrically.

BR-IC-N-WP Water Bromide in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

C-DOC-HTC-WP Water Dissolved Organic Carbon by Combustion APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

C-TOC-HTC-WP Water Total Organic Carbon by Combustion APHA 5310 B-WP

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP Water Chloride in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-L-CFA-WT Water Low Level Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-WT Water Low Level Total Cyanide in water by CFA ISO 14403-2:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, however it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-WT Water Low level WAD Cyanide in water by CFA APHA 4500CN I-Weak acid Dist Colorimet

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

CR-CR6-PWQO-IC-WT Water Chromium +6 EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-SCREEN-WP Water Conductivity Screen (Internal Use Only) APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

F-IC-N-WP Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-U-CVAF-VA Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

HG-T-U-CVAF-VA Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

MEHG-T-GCAF-VA Water Total Methylmercury in Water by GCAFS EPA 1630 (mod)

Reference Information

This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".

MET-D-CCMS-WP	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-TOTKJ-WP	Water	Total Kjeldahl Nitrogen	APHA 4500 NorgD (modified)

Aqueous samples are digested in a block digester with sulfuric acid and copper sulfate as a catalyst. Total Kjeldahl Nitrogen is then analyzed using a discrete analyzer with colorimetric detection.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-L-IC-N-WP	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

P-T-L-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-LR-WP	Water	Total Suspended Solids	APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 Œ 105°C.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
TB	ALS ENVIRONMENTAL - THUNDER BAY, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2738661 Report Date: 25-NOV-22

Client: Alamos Gold Inc.
C/O Stantec Consulting 500 - 311 Portage Avenue
Winnipeg MB R3B 2B9

Contact: KAREN MATHERS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACY-TITR-TB	**Water**							
Batch R5888496								
WG3771219-3 DUP		**L2738661-1**						
Acidity (as CaCO3)		2.9	3.2		mg/L	9.3	20	05-NOV-22
WG3771219-2 LCS								
Acidity (as CaCO3)			107.7		%		85-115	05-NOV-22
WG3771219-1 MB								
Acidity (as CaCO3)			<2.0		mg/L		3	05-NOV-22
ALK-TITR-WP	**Water**							
Batch R5889136								
WG3771978-14 LCS								
Alkalinity, Total (as CaCO3)			98.1		%		85-115	08-NOV-22
WG3771978-9 LCS								
Alkalinity, Total (as CaCO3)			97.0		%		85-115	08-NOV-22
WG3771978-11 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-NOV-22
WG3771978-6 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-NOV-22
BR-IC-N-WP	**Water**							
Batch R5886256								
WG3770717-7 DUP		**L2738661-9**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	01-NOV-22
WG3770717-2 LCS								
Bromide (Br)			98.6		%		85-115	01-NOV-22
WG3770717-6 LCS								
Bromide (Br)			98.3		%		85-115	01-NOV-22
WG3770717-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	01-NOV-22
WG3770717-5 MB								
Bromide (Br)			<0.10		mg/L		0.1	01-NOV-22
WG3770717-8 MS		**L2738661-9**						
Bromide (Br)			101.4		%		75-125	01-NOV-22
C-DOC-HTC-WP	**Water**							
Batch R5892982								
WG3772957-3 DUP		**L2738661-14**						
Dissolved Organic Carbon		9.01	9.19		mg/L	2.0	20	16-NOV-22
WG3772957-2 LCS								
Dissolved Organic Carbon			101.9		%		80-120	16-NOV-22
WG3772957-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DOC-HTC-WP	**Water**							
Batch R5892982								
WG3772957-4 MS		**L2738661-15**						
Dissolved Organic Carbon			N/A	MS-B	%		-	16-NOV-22
C-TOC-HTC-WP	**Water**							
Batch R5892983								
WG3772958-3 DUP		**L2738661-14**						
Total Organic Carbon		9.17	9.35		mg/L	2.0	20	16-NOV-22
WG3772958-2 LCS								
Total Organic Carbon			105.6		%		80-120	16-NOV-22
WG3772958-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	16-NOV-22
WG3772958-4 MS		**L2738661-15**						
Total Organic Carbon			N/A	MS-B	%		-	16-NOV-22
Batch R5894864								
WG3773401-2 LCS								
Total Organic Carbon			109.9		%		80-120	18-NOV-22
WG3773401-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	18-NOV-22
CL-L-IC-N-WP	**Water**							
Batch R5886256								
WG3770717-7 DUP		**L2738661-9**						
Chloride (Cl)		0.11	0.11		mg/L	0.0	20	01-NOV-22
WG3770717-2 LCS								
Chloride (Cl)			99.2		%		90-110	01-NOV-22
WG3770717-6 LCS								
Chloride (Cl)			98.6		%		90-110	01-NOV-22
WG3770717-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	01-NOV-22
WG3770717-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	01-NOV-22
WG3770717-8 MS		**L2738661-9**						
Chloride (Cl)			106.0		%		75-125	01-NOV-22
CN-FREE-L-CFA-WT	**Water**							
Batch R5890544								
WG3772301-8 DUP		**L2738661-17**						
Cyanide, Free		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	10-NOV-22
WG3772301-7 LCS								
Cyanide, Free			111.2		%		80-120	10-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-FREE-L-CFA-WT	**Water**							
Batch R5890544								
WG3772301-6 MB								
Cyanide, Free			<0.0010		mg/L		0.001	10-NOV-22
WG3772301-9 MS		**L2738661-17**						
Cyanide, Free			114.7		%		75-125	10-NOV-22
CN-T-L-CFA-WT	**Water**							
Batch R5890544								
WG3772301-8 DUP		**L2738661-17**						
Cyanide, Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	10-NOV-22
WG3772301-7 LCS								
Cyanide, Total			100.8		%		80-120	10-NOV-22
WG3772301-6 MB								
Cyanide, Total			<0.0010		mg/L		0.001	10-NOV-22
WG3772301-9 MS		**L2738661-17**						
Cyanide, Total			98.5		%		70-130	10-NOV-22
CN-WAD-L-CFA-WT	**Water**							
Batch R5890544								
WG3772301-8 DUP		**L2738661-17**						
Cyanide, Weak Acid Diss		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	10-NOV-22
WG3772301-7 LCS								
Cyanide, Weak Acid Diss			114.4		%		80-120	10-NOV-22
WG3772301-6 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	10-NOV-22
WG3772301-9 MS		**L2738661-17**						
Cyanide, Weak Acid Diss			116.7		%		70-130	10-NOV-22
CR-CR6-PWQO-IC-WT	**Water**							
Batch R5886917								
WG3771264-2 LCS								
Chromium, Hexavalent			99.4		%		80-120	03-NOV-22
WG3771264-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	03-NOV-22
F-IC-N-WP	**Water**							
Batch R5886256								
WG3770717-7 DUP		**L2738661-9**						
Fluoride (F)		0.041	0.040		mg/L	1.6	20	01-NOV-22
WG3770717-2 LCS								
Fluoride (F)			101.1		%		90-110	01-NOV-22
WG3770717-6 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP	**Water**							
Batch R5886256								
WG3770717-6 LCS								
Fluoride (F)			101.3		%		90-110	01-NOV-22
WG3770717-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	01-NOV-22
WG3770717-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	01-NOV-22
WG3770717-8 MS		**L2738661-9**						
Fluoride (F)			110.2		%		75-125	01-NOV-22
HG-D-U-CVAF-VA	**Water**							
Batch R5888257								
WG3771678-2 LCS								
Mercury (Hg)-Dissolved			111.6		%		80-120	07-NOV-22
WG3771678-1 MB		**NP**						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	07-NOV-22
Batch R5889017								
WG3771894-3 DUP		**L2738661-14**						
Mercury (Hg)-Dissolved		0.00103	0.00103		ug/L	0.4	20	08-NOV-22
WG3771894-2 LCS								
Mercury (Hg)-Dissolved			94.9		%		80-120	08-NOV-22
WG3771894-1 MB		**NP**						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	08-NOV-22
WG3771894-4 MS		**L2738661-15**						
Mercury (Hg)-Dissolved			91.4		%		70-130	08-NOV-22
HG-T-U-CVAF-VA	**Water**							
Batch R5888985								
WG3771848-3 DUP		**L2738661-1**						
Mercury (Hg)-Total		0.00113	0.00119		ug/L	4.7	20	08-NOV-22
WG3771848-2 LCS								
Mercury (Hg)-Total			94.9		%		80-120	08-NOV-22
WG3771848-1 MB								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	08-NOV-22
WG3771848-4 MS		**L2738661-2**						
Mercury (Hg)-Total			101.8		%		70-130	08-NOV-22
MEHG-T-GCAF-VA	**Water**							
Batch R5897457								
WG3774095-2 DUP		**L2738661-15**						
Methylmercury (as MeHg)-Total		0.000094	0.000096		ug/L	2.1	30	24-NOV-22
WG3774095-3 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MEHG-T-GCAF-VA	**Water**							
Batch	**R5897457**							
WG3774095-3	**LCS**							
Methylmercury (as MeHg)-Total			80.5		%		70-130	24-NOV-22
WG3774095-1	**MB**							
Methylmercury (as MeHg)-Total			<0.000020		ug/L		0.00002	24-NOV-22
WG3774095-4	**MS**	**L2738661-4**						
Methylmercury (as MeHg)-Total			90.7		%		60-140	24-NOV-22
MET-D-CCMS-WP	**Water**							
Batch	**R5888944**							
WG3771581-2	**LCS**							
Aluminum (Al)-Dissolved			98.0		%		80-120	07-NOV-22
Antimony (Sb)-Dissolved			107.1		%		80-120	07-NOV-22
Arsenic (As)-Dissolved			101.9		%		80-120	07-NOV-22
Barium (Ba)-Dissolved			101.8		%		80-120	07-NOV-22
Beryllium (Be)-Dissolved			96.5		%		80-120	07-NOV-22
Bismuth (Bi)-Dissolved			97.9		%		80-120	07-NOV-22
Boron (B)-Dissolved			97.1		%		80-120	07-NOV-22
Cadmium (Cd)-Dissolved			103.7		%		80-120	07-NOV-22
Calcium (Ca)-Dissolved			99.9		%		80-120	07-NOV-22
Cesium (Cs)-Dissolved			95.5		%		80-120	07-NOV-22
Chromium (Cr)-Dissolved			102.2		%		80-120	07-NOV-22
Cobalt (Co)-Dissolved			101.3		%		80-120	07-NOV-22
Copper (Cu)-Dissolved			102.5		%		80-120	07-NOV-22
Iron (Fe)-Dissolved			93.5		%		80-120	07-NOV-22
Lead (Pb)-Dissolved			98.9		%		80-120	07-NOV-22
Lithium (Li)-Dissolved			96.9		%		80-120	07-NOV-22
Magnesium (Mg)-Dissolved			111.6		%		80-120	07-NOV-22
Manganese (Mn)-Dissolved			100.3		%		80-120	07-NOV-22
Molybdenum (Mo)-Dissolved			99.0		%		80-120	07-NOV-22
Nickel (Ni)-Dissolved			100.1		%		80-120	07-NOV-22
Phosphorus (P)-Dissolved			101.2		%		80-120	07-NOV-22
Potassium (K)-Dissolved			101.3		%		80-120	07-NOV-22
Rubidium (Rb)-Dissolved			97.0		%		80-120	07-NOV-22
Selenium (Se)-Dissolved			102.0		%		80-120	07-NOV-22
Silicon (Si)-Dissolved			99.7		%		80-120	07-NOV-22
Silver (Ag)-Dissolved			95.3		%		80-120	07-NOV-22
Sodium (Na)-Dissolved			100.7		%		80-120	07-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5888944								
WG3771581-2 LCS								
Strontium (Sr)-Dissolved			92.6		%		80-120	07-NOV-22
Sulfur (S)-Dissolved			96.3		%		80-120	07-NOV-22
Tellurium (Te)-Dissolved			92.8		%		80-120	07-NOV-22
Thallium (Tl)-Dissolved			98.3		%		80-120	07-NOV-22
Thorium (Th)-Dissolved			91.6		%		80-120	07-NOV-22
Tin (Sn)-Dissolved			101.6		%		80-120	07-NOV-22
Titanium (Ti)-Dissolved			97.6		%		80-120	07-NOV-22
Tungsten (W)-Dissolved			101.6		%		80-120	07-NOV-22
Uranium (U)-Dissolved			95.9		%		80-120	07-NOV-22
Vanadium (V)-Dissolved			101.1		%		80-120	07-NOV-22
Zinc (Zn)-Dissolved			101.0		%		80-120	07-NOV-22
Zirconium (Zr)-Dissolved			82.9		%		80-120	07-NOV-22
WG3771581-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-NOV-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-NOV-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-NOV-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	07-NOV-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-NOV-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	07-NOV-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-NOV-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-NOV-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-NOV-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-NOV-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-NOV-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-NOV-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-NOV-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	07-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5888944								
WG3771581-1 MB								
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-NOV-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	07-NOV-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-NOV-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-NOV-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-NOV-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-NOV-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	07-NOV-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	07-NOV-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-NOV-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-NOV-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	07-NOV-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-NOV-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-NOV-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-NOV-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	07-NOV-22
Batch R5889776								
WG3771817-2 LCS								
Aluminum (Al)-Dissolved			99.4		%		80-120	08-NOV-22
Antimony (Sb)-Dissolved			101.0		%		80-120	08-NOV-22
Arsenic (As)-Dissolved			102.4		%		80-120	08-NOV-22
Barium (Ba)-Dissolved			100.3		%		80-120	08-NOV-22
Beryllium (Be)-Dissolved			100.2		%		80-120	08-NOV-22
Bismuth (Bi)-Dissolved			95.9		%		80-120	08-NOV-22
Boron (B)-Dissolved			96.6		%		80-120	08-NOV-22
Cadmium (Cd)-Dissolved			98.3		%		80-120	08-NOV-22
Calcium (Ca)-Dissolved			96.8		%		80-120	08-NOV-22
Cesium (Cs)-Dissolved			101.6		%		80-120	08-NOV-22
Chromium (Cr)-Dissolved			96.9		%		80-120	08-NOV-22
Cobalt (Co)-Dissolved			96.5		%		80-120	08-NOV-22
Copper (Cu)-Dissolved			94.2		%		80-120	08-NOV-22
Iron (Fe)-Dissolved			97.2		%		80-120	08-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5889776								
WG3771817-2 LCS								
Lead (Pb)-Dissolved			94.5		%		80-120	08-NOV-22
Lithium (Li)-Dissolved			94.5		%		80-120	08-NOV-22
Magnesium (Mg)-Dissolved			96.8		%		80-120	08-NOV-22
Manganese (Mn)-Dissolved			97.6		%		80-120	08-NOV-22
Molybdenum (Mo)-Dissolved			101.2		%		80-120	08-NOV-22
Nickel (Ni)-Dissolved			95.1		%		80-120	08-NOV-22
Phosphorus (P)-Dissolved			104.7		%		80-120	08-NOV-22
Potassium (K)-Dissolved			95.4		%		80-120	08-NOV-22
Rubidium (Rb)-Dissolved			96.4		%		80-120	08-NOV-22
Selenium (Se)-Dissolved			94.1		%		80-120	08-NOV-22
Silicon (Si)-Dissolved			98.1		%		80-120	08-NOV-22
Silver (Ag)-Dissolved			99.0		%		80-120	08-NOV-22
Sodium (Na)-Dissolved			100.1		%		80-120	08-NOV-22
Strontium (Sr)-Dissolved			100.9		%		80-120	08-NOV-22
Sulfur (S)-Dissolved			102.1		%		80-120	08-NOV-22
Tellurium (Te)-Dissolved			99.9		%		80-120	08-NOV-22
Thallium (Tl)-Dissolved			95.5		%		80-120	08-NOV-22
Thorium (Th)-Dissolved			92.5		%		80-120	08-NOV-22
Tin (Sn)-Dissolved			99.98		%		80-120	08-NOV-22
Titanium (Ti)-Dissolved			98.3		%		80-120	08-NOV-22
Tungsten (W)-Dissolved			94.9		%		80-120	08-NOV-22
Uranium (U)-Dissolved			96.3		%		80-120	08-NOV-22
Vanadium (V)-Dissolved			99.2		%		80-120	08-NOV-22
Zinc (Zn)-Dissolved			103.5		%		80-120	08-NOV-22
Zirconium (Zr)-Dissolved			93.1		%		80-120	08-NOV-22
WG3771817-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-NOV-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-NOV-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	08-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5889776								
WG3771817-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-NOV-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-NOV-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-NOV-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-NOV-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-NOV-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	08-NOV-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-NOV-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-NOV-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-NOV-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	08-NOV-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-NOV-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-NOV-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-NOV-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-22
MET-T-CCMS-WP	**Water**							

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5889776								
WG3771799-2 LCS								
Aluminum (Al)-Total			100.8		%		80-120	08-NOV-22
Antimony (Sb)-Total			105.5		%		80-120	08-NOV-22
Arsenic (As)-Total			99.7		%		80-120	08-NOV-22
Barium (Ba)-Total			100.2		%		80-120	08-NOV-22
Beryllium (Be)-Total			103.0		%		80-120	08-NOV-22
Bismuth (Bi)-Total			96.7		%		80-120	08-NOV-22
Boron (B)-Total			101.8		%		80-120	08-NOV-22
Cadmium (Cd)-Total			100.2		%		80-120	08-NOV-22
Calcium (Ca)-Total			97.3		%		80-120	08-NOV-22
Cesium (Cs)-Total			100.2		%		80-120	08-NOV-22
Chromium (Cr)-Total			100.8		%		80-120	08-NOV-22
Cobalt (Co)-Total			101.8		%		80-120	08-NOV-22
Copper (Cu)-Total			102.7		%		80-120	08-NOV-22
Iron (Fe)-Total			99.1		%		80-120	08-NOV-22
Lead (Pb)-Total			98.6		%		80-120	08-NOV-22
Lithium (Li)-Total			107.2		%		80-120	08-NOV-22
Magnesium (Mg)-Total			104.8		%		80-120	08-NOV-22
Manganese (Mn)-Total			99.7		%		80-120	08-NOV-22
Molybdenum (Mo)-Total			96.2		%		80-120	08-NOV-22
Nickel (Ni)-Total			101.5		%		80-120	08-NOV-22
Potassium (K)-Total			97.5		%		80-120	08-NOV-22
Phosphorus (P)-Total			106.1		%		80-120	08-NOV-22
Rubidium (Rb)-Total			97.1		%		80-120	08-NOV-22
Selenium (Se)-Total			102.2		%		80-120	08-NOV-22
Silicon (Si)-Total			100.7		%		80-120	08-NOV-22
Silver (Ag)-Total			99.1		%		80-120	08-NOV-22
Sodium (Na)-Total			103.1		%		80-120	08-NOV-22
Strontium (Sr)-Total			98.2		%		80-120	08-NOV-22
Sulfur (S)-Total			92.0		%		80-120	08-NOV-22
Tellurium (Te)-Total			96.6		%		80-120	08-NOV-22
Thallium (Tl)-Total			98.3		%		80-120	08-NOV-22
Thorium (Th)-Total			90.1		%		80-120	08-NOV-22
Tin (Sn)-Total			100.9		%		80-120	08-NOV-22
Titanium (Ti)-Total			99.7		%		80-120	08-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5889776								
WG3771799-2 LCS								
Tungsten (W)-Total			99.9		%		80-120	08-NOV-22
Uranium (U)-Total			98.6		%		80-120	08-NOV-22
Vanadium (V)-Total			99.96		%		80-120	08-NOV-22
Zinc (Zn)-Total			99.9		%		80-120	08-NOV-22
Zirconium (Zr)-Total			87.5		%		80-120	08-NOV-22
WG3771800-2 LCS								
Aluminum (Al)-Total			98.8		%		80-120	08-NOV-22
Antimony (Sb)-Total			106.9		%		80-120	08-NOV-22
Arsenic (As)-Total			100.1		%		80-120	08-NOV-22
Barium (Ba)-Total			101.0		%		80-120	08-NOV-22
Beryllium (Be)-Total			98.7		%		80-120	08-NOV-22
Bismuth (Bi)-Total			97.6		%		80-120	08-NOV-22
Boron (B)-Total			98.9		%		80-120	08-NOV-22
Cadmium (Cd)-Total			101.3		%		80-120	08-NOV-22
Calcium (Ca)-Total			97.5		%		80-120	08-NOV-22
Cesium (Cs)-Total			99.9		%		80-120	08-NOV-22
Chromium (Cr)-Total			99.4		%		80-120	08-NOV-22
Cobalt (Co)-Total			100.6		%		80-120	08-NOV-22
Copper (Cu)-Total			101.1		%		80-120	08-NOV-22
Iron (Fe)-Total			97.5		%		80-120	08-NOV-22
Lead (Pb)-Total			96.9		%		80-120	08-NOV-22
Lithium (Li)-Total			102.9		%		80-120	08-NOV-22
Magnesium (Mg)-Total			106.9		%		80-120	08-NOV-22
Manganese (Mn)-Total			97.9		%		80-120	08-NOV-22
Molybdenum (Mo)-Total			98.0		%		80-120	08-NOV-22
Nickel (Ni)-Total			100.0		%		80-120	08-NOV-22
Potassium (K)-Total			96.5		%		80-120	08-NOV-22
Phosphorus (P)-Total			94.2		%		80-120	08-NOV-22
Rubidium (Rb)-Total			96.1		%		80-120	08-NOV-22
Selenium (Se)-Total			103.3		%		80-120	08-NOV-22
Silicon (Si)-Total			101.0		%		80-120	08-NOV-22
Silver (Ag)-Total			101.3		%		80-120	08-NOV-22
Sodium (Na)-Total			103.2		%		80-120	08-NOV-22
Strontium (Sr)-Total			98.1		%		80-120	08-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5889776								
WG3771800-2 LCS								
Sulfur (S)-Total			89.5		%		80-120	08-NOV-22
Tellurium (Te)-Total			99.1		%		80-120	08-NOV-22
Thallium (Tl)-Total			97.7		%		80-120	08-NOV-22
Thorium (Th)-Total			94.2		%		80-120	08-NOV-22
Tin (Sn)-Total			101.5		%		80-120	08-NOV-22
Titanium (Ti)-Total			95.3		%		80-120	08-NOV-22
Tungsten (W)-Total			99.1		%		80-120	08-NOV-22
Uranium (U)-Total			96.4		%		80-120	08-NOV-22
Vanadium (V)-Total			99.4		%		80-120	08-NOV-22
Zinc (Zn)-Total			102.6		%		80-120	08-NOV-22
Zirconium (Zr)-Total			90.1		%		80-120	08-NOV-22
WG3771799-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	08-NOV-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	08-NOV-22
Boron (B)-Total			<0.010		mg/L		0.01	08-NOV-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	08-NOV-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	08-NOV-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	08-NOV-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	08-NOV-22
Iron (Fe)-Total			<0.010		mg/L		0.01	08-NOV-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	08-NOV-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	08-NOV-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	08-NOV-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	08-NOV-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	08-NOV-22
Potassium (K)-Total			<0.050		mg/L		0.05	08-NOV-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	08-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5889776								
WG3771799-1 MB								
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	08-NOV-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	08-NOV-22
Silicon (Si)-Total			<0.10		mg/L		0.1	08-NOV-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	08-NOV-22
Sodium (Na)-Total			<0.050		mg/L		0.05	08-NOV-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	08-NOV-22
Sulfur (S)-Total			<0.50		mg/L		0.5	08-NOV-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	08-NOV-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	08-NOV-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	08-NOV-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	08-NOV-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	08-NOV-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	08-NOV-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	08-NOV-22
WG3771800-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	08-NOV-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	08-NOV-22
Boron (B)-Total			<0.010		mg/L		0.01	08-NOV-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	08-NOV-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	08-NOV-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	08-NOV-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	08-NOV-22
Iron (Fe)-Total			<0.010		mg/L		0.01	08-NOV-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	08-NOV-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	08-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5889776								
WG3771800-1 MB								
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	08-NOV-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	08-NOV-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	08-NOV-22
Potassium (K)-Total			<0.050		mg/L		0.05	08-NOV-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	08-NOV-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	08-NOV-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	08-NOV-22
Silicon (Si)-Total			<0.10		mg/L		0.1	08-NOV-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	08-NOV-22
Sodium (Na)-Total			<0.050		mg/L		0.05	08-NOV-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	08-NOV-22
Sulfur (S)-Total			<0.50		mg/L		0.5	08-NOV-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	08-NOV-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	08-NOV-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	08-NOV-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	08-NOV-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	08-NOV-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	08-NOV-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	08-NOV-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	08-NOV-22
Batch R5891478								
WG3771800-4 DUP		**L2738661-7**						
Aluminum (Al)-Total		0.270	0.277		mg/L	2.6	20	10-NOV-22
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-NOV-22
Arsenic (As)-Total		0.00080	0.00079		mg/L	1.5	20	10-NOV-22
Barium (Ba)-Total		0.0337	0.0337		mg/L	0.2	20	10-NOV-22
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-NOV-22
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-NOV-22
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-NOV-22
Cadmium (Cd)-Total		0.0000352	0.0000377		mg/L	6.8	20	10-NOV-22
Calcium (Ca)-Total		7.42	7.56		mg/L	1.9	20	10-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5891478								
WG3771800-4 DUP		**L2738661-7**						
Cesium (Cs)-Total		0.000085	0.000076		mg/L	11	20	10-NOV-22
Chromium (Cr)-Total		0.00061	0.00067		mg/L	10	20	10-NOV-22
Cobalt (Co)-Total		0.00056	0.00058		mg/L	5.0	20	10-NOV-22
Copper (Cu)-Total		0.00116	0.00108		mg/L	7.9	20	10-NOV-22
Iron (Fe)-Total		1.98	2.00		mg/L	1.1	20	10-NOV-22
Lead (Pb)-Total		0.000432	0.000424		mg/L	1.8	20	10-NOV-22
Lithium (Li)-Total		0.0020	0.0020		mg/L	0.1	20	10-NOV-22
Magnesium (Mg)-Total		1.34	1.38		mg/L	2.7	20	10-NOV-22
Manganese (Mn)-Total		0.144	0.144		mg/L	0.0	20	10-NOV-22
Molybdenum (Mo)-Total		0.000257	0.000242		mg/L	5.8	20	10-NOV-22
Nickel (Ni)-Total		0.00127	0.00155	J	mg/L	0.00028	0.001	10-NOV-22
Potassium (K)-Total		1.18	1.18		mg/L	0.4	20	10-NOV-22
Phosphorus (P)-Total		0.461	0.454		mg/L	1.4	20	10-NOV-22
Rubidium (Rb)-Total		0.00273	0.00273		mg/L	0.0	20	10-NOV-22
Selenium (Se)-Total		<0.000050	0.000062	RPD-NA	mg/L	N/A	20	10-NOV-22
Silicon (Si)-Total		5.31	5.48		mg/L	3.1	20	10-NOV-22
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-NOV-22
Sodium (Na)-Total		1.24	1.30		mg/L	5.3	20	10-NOV-22
Strontium (Sr)-Total		0.0183	0.0176		mg/L	3.9	20	10-NOV-22
Sulfur (S)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	10-NOV-22
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	10-NOV-22
Thallium (Tl)-Total		0.000011	<0.000010	RPD-NA	mg/L	N/A	20	10-NOV-22
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-NOV-22
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-NOV-22
Titanium (Ti)-Total		0.0102	0.0105		mg/L	2.9	20	10-NOV-22
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-NOV-22
Uranium (U)-Total		0.000019	0.000021		mg/L	11	20	10-NOV-22
Vanadium (V)-Total		0.00081	0.00080		mg/L	1.3	20	10-NOV-22
Zinc (Zn)-Total		0.0128	0.0144		mg/L	12	20	10-NOV-22
Zirconium (Zr)-Total		0.00025	0.00023		mg/L	7.7	20	10-NOV-22
WG3771800-5 MS		**L2738661-7**						
Aluminum (Al)-Total			N/A	MS-B	%		-	10-NOV-22
Antimony (Sb)-Total			103.8		%		70-130	10-NOV-22
Arsenic (As)-Total			103.2		%		70-130	10-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5891478								
WG3771800-5 MS		**L2738661-7**						
Barium (Ba)-Total			N/A	MS-B	%		-	10-NOV-22
Beryllium (Be)-Total			108.7		%		70-130	10-NOV-22
Bismuth (Bi)-Total			114.4		%		70-130	10-NOV-22
Boron (B)-Total			102.9		%		70-130	10-NOV-22
Cadmium (Cd)-Total			106.9		%		70-130	10-NOV-22
Calcium (Ca)-Total			N/A	MS-B	%		-	10-NOV-22
Cesium (Cs)-Total			104.0		%		70-130	10-NOV-22
Chromium (Cr)-Total			102.6		%		70-130	10-NOV-22
Cobalt (Co)-Total			103.0		%		70-130	10-NOV-22
Copper (Cu)-Total			101.7		%		70-130	10-NOV-22
Iron (Fe)-Total			99.8		%		70-130	10-NOV-22
Lead (Pb)-Total			99.7		%		70-130	10-NOV-22
Lithium (Li)-Total			112.8		%		70-130	10-NOV-22
Magnesium (Mg)-Total			N/A	MS-B	%		-	10-NOV-22
Manganese (Mn)-Total			N/A	MS-B	%		-	10-NOV-22
Molybdenum (Mo)-Total			95.8		%		70-130	10-NOV-22
Nickel (Ni)-Total			102.6		%		70-130	10-NOV-22
Potassium (K)-Total			104.4		%		70-130	10-NOV-22
Phosphorus (P)-Total			99.3		%		70-130	10-NOV-22
Rubidium (Rb)-Total			104.6		%		70-130	10-NOV-22
Selenium (Se)-Total			109.7		%		70-130	10-NOV-22
Silicon (Si)-Total			107.6		%		70-130	10-NOV-22
Silver (Ag)-Total			98.8		%		70-130	10-NOV-22
Sodium (Na)-Total			103.8		%		70-130	10-NOV-22
Strontium (Sr)-Total			97.8		%		70-130	10-NOV-22
Sulfur (S)-Total			105.1		%		70-130	10-NOV-22
Tellurium (Te)-Total			101.0		%		70-130	10-NOV-22
Thallium (Tl)-Total			101.2		%		70-130	10-NOV-22
Thorium (Th)-Total			99.9		%		70-130	10-NOV-22
Tin (Sn)-Total			102.2		%		70-130	10-NOV-22
Titanium (Ti)-Total			101.6		%		70-130	10-NOV-22
Tungsten (W)-Total			99.7		%		70-130	10-NOV-22
Uranium (U)-Total			96.5		%		70-130	10-NOV-22
Vanadium (V)-Total			103.4		%		70-130	10-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5891478								
WG3771800-5 MS		**L2738661-7**						
Zinc (Zn)-Total			103.0		%		70-130	10-NOV-22
Zirconium (Zr)-Total			98.3		%		70-130	10-NOV-22
N-TOTKJ-WP	**Water**							
Batch R5886836								
WG3771046-15 DUP		**L2738661-11**						
Total Kjeldahl Nitrogen		0.26	<0.20	RPD-NA	mg/L	N/A	20	03-NOV-22
WG3771046-10 LCS								
Total Kjeldahl Nitrogen			95.9		%		75-125	03-NOV-22
WG3771046-14 LCS								
Total Kjeldahl Nitrogen			96.2		%		75-125	03-NOV-22
WG3771046-13 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	03-NOV-22
WG3771046-9 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	03-NOV-22
WG3771046-16 MS		**L2738661-11**						
Total Kjeldahl Nitrogen			106.4		%		70-130	03-NOV-22
NH3-COL-WP	**Water**							
Batch R5892556								
WG3772752-10 LCS								
Ammonia, Total (as N)			95.9		%		85-115	15-NOV-22
WG3772752-6 LCS								
Ammonia, Total (as N)			94.3		%		85-115	15-NOV-22
WG3772752-5 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	15-NOV-22
WG3772752-9 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	15-NOV-22
Batch R5893359								
WG3772921-2 LCS								
Ammonia, Total (as N)			100.3		%		85-115	16-NOV-22
WG3772921-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	16-NOV-22
Batch R5894156								
WG3773158-2 LCS								
Ammonia, Total (as N)			101.7		%		85-115	17-NOV-22
WG3773158-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	17-NOV-22
NO2-L-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-WP	**Water**							
Batch R5886256								
WG3770717-7 DUP		**L2738661-9**						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-NOV-22
WG3770717-2 LCS								
Nitrite (as N)			99.1		%		90-110	01-NOV-22
WG3770717-6 LCS								
Nitrite (as N)			99.2		%		90-110	01-NOV-22
WG3770717-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	01-NOV-22
WG3770717-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	01-NOV-22
WG3770717-8 MS		**L2738661-9**						
Nitrite (as N)			106.2		%		75-125	01-NOV-22
NO3-L-IC-N-WP	**Water**							
Batch R5886256								
WG3770717-7 DUP		**L2738661-9**						
Nitrate (as N)		0.0139	0.0134		mg/L	3.7	20	01-NOV-22
WG3770717-2 LCS								
Nitrate (as N)			99.4		%		90-110	01-NOV-22
WG3770717-6 LCS								
Nitrate (as N)			100.1		%		90-110	01-NOV-22
WG3770717-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	01-NOV-22
WG3770717-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	01-NOV-22
WG3770717-8 MS		**L2738661-9**						
Nitrate (as N)			106.9		%		75-125	01-NOV-22
P-T-COL-WP	**Water**							
Batch R5888121								
WG3771469-10 LCS								
Phosphorus (P)-Total			95.5		%		80-120	07-NOV-22
WG3771469-14 LCS								
Phosphorus (P)-Total			94.6		%		80-120	07-NOV-22
WG3771469-13 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	07-NOV-22
WG3771469-9 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	07-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-WP	**Water**							
Batch R5889281								
WG3771814-7 DUP		**L2738661-15**						
Phosphorus (P)-Total		0.119	0.116		mg/L	3.0	20	09-NOV-22
WG3771814-2 LCS								
Phosphorus (P)-Total			96.8		%		80-120	09-NOV-22
WG3771814-6 LCS								
Phosphorus (P)-Total			97.3		%		80-120	09-NOV-22
WG3771814-1 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	09-NOV-22
WG3771814-5 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	09-NOV-22
WG3771814-8 MS		**L2738661-14**						
Phosphorus (P)-Total			95.6		%		70-130	09-NOV-22
Batch R5891777								
WG3772250-3 DUP		**L2738661-11**						
Phosphorus (P)-Total		0.0153	0.0151		mg/L	1.4	20	15-NOV-22
WG3772250-2 LCS								
Phosphorus (P)-Total			97.0		%		80-120	15-NOV-22
WG3772250-1 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	15-NOV-22
WG3772250-4 MS		**L2738661-12**						
Phosphorus (P)-Total			99.7		%		70-130	15-NOV-22
P-T-L-COL-WP	**Water**							
Batch R5890116								
WG3772078-2 LCS								
Phosphorus (P)-Total			81.5		%		80-120	10-NOV-22
WG3772078-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	10-NOV-22
SO4-IC-N-WP	**Water**							
Batch R5886256								
WG3770717-7 DUP		**L2738661-9**						
Sulfate (SO4)		0.74	0.73		mg/L	0.4	20	01-NOV-22
WG3770717-2 LCS								
Sulfate (SO4)			101.2		%		90-110	01-NOV-22
WG3770717-6 LCS								
Sulfate (SO4)			100.3		%		90-110	01-NOV-22
WG3770717-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	01-NOV-22
WG3770717-5 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP	**Water**							
Batch R5886256								
WG3770717-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	01-NOV-22
WG3770717-8 MS		**L2738661-9**						
Sulfate (SO4)			107.3		%		75-125	01-NOV-22
SOLIDS-TOTSUS-LR-WP	**Water**							
Batch R5885717								
WG3770835-2 LCS								
Total Suspended Solids			96.8		%		85-115	01-NOV-22
WG3770835-1 MB								
Total Suspended Solids			<1.0		mg/L		1	01-NOV-22
Batch R5886484								
WG3771032-3 DUP		**L2738661-17**						
Total Suspended Solids		2.1	1.8		mg/L	14	20	02-NOV-22
WG3771032-2 LCS								
Total Suspended Solids			88.5		%		85-115	02-NOV-22
WG3771032-1 MB								
Total Suspended Solids			<1.0		mg/L		1	02-NOV-22
Batch R5887398								
WG3771181-3 DUP		**L2738661-9**						
Total Suspended Solids		1.5	1.9	J	mg/L	0.4	2	03-NOV-22
WG3771181-2 LCS								
Total Suspended Solids			99.3		%		85-115	03-NOV-22
WG3771181-1 MB								
Total Suspended Solids			<1.0		mg/L		1	03-NOV-22

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Anions and Nutrients							
Nitrate in Water by IC (Low Level)							
	1	27-OCT-22 09:57	01-NOV-22 10:30	3	5	days	EHTR
	2	27-OCT-22 05:00	01-NOV-22 10:30	3	5	days	EHTR
	3	28-OCT-22 11:24	01-NOV-22 10:30	3	4	days	EHTR
	4	28-OCT-22 11:53	01-NOV-22 10:30	3	4	days	EHTR
	5	28-OCT-22 12:10	01-NOV-22 10:30	3	4	days	EHTR
	6	28-OCT-22 12:05	01-NOV-22 10:30	3	4	days	EHTR
	7	28-OCT-22 12:53	01-NOV-22 10:30	3	4	days	EHTR
	8	28-OCT-22 13:13	01-NOV-22 10:30	3	4	days	EHTR
	9	28-OCT-22 13:34	01-NOV-22 10:30	3	4	days	EHTL
	10	28-OCT-22 14:24	01-NOV-22 10:30	3	4	days	EHTL
	11	28-OCT-22 15:04	01-NOV-22 10:30	3	4	days	EHTL
	12	28-OCT-22 15:22	01-NOV-22 10:30	3	4	days	EHTL
	13	28-OCT-22 15:40	01-NOV-22 10:30	3	4	days	EHTL
	14	28-OCT-22 15:56	01-NOV-22 10:30	3	4	days	EHTL
	15	28-OCT-22 16:27	01-NOV-22 10:30	3	4	days	EHTL
	17	28-OCT-22	01-NOV-22 10:30	3	4	days	EHTR
	18	28-OCT-22	01-NOV-22 10:30	3	4	days	EHTR
Nitrite in Water by IC (Low Level)							
	1	27-OCT-22 09:57	01-NOV-22 10:30	3	5	days	EHTR
	2	27-OCT-22 05:00	01-NOV-22 10:30	3	5	days	EHTR
	3	28-OCT-22 11:24	01-NOV-22 10:30	3	4	days	EHTR
	4	28-OCT-22 11:53	01-NOV-22 10:30	3	4	days	EHTR
	5	28-OCT-22 12:10	01-NOV-22 10:30	3	4	days	EHTR
	6	28-OCT-22 12:05	01-NOV-22 10:30	3	4	days	EHTR
	7	28-OCT-22 12:53	01-NOV-22 10:30	3	4	days	EHTR
	8	28-OCT-22 13:13	01-NOV-22 10:30	3	4	days	EHTR
	9	28-OCT-22 13:34	01-NOV-22 10:30	3	4	days	EHTL
	10	28-OCT-22 14:24	01-NOV-22 10:30	3	4	days	EHTL
	11	28-OCT-22 15:04	01-NOV-22 10:30	3	4	days	EHTL
	12	28-OCT-22 15:22	01-NOV-22 10:30	3	4	days	EHTL
	13	28-OCT-22 15:40	01-NOV-22 10:30	3	4	days	EHTL
	14	28-OCT-22 15:56	01-NOV-22 10:30	3	4	days	EHTL
	15	28-OCT-22 16:27	01-NOV-22 10:30	3	4	days	EHTL
	17	28-OCT-22	01-NOV-22 10:30	3	4	days	EHTR
	18	28-OCT-22	01-NOV-22 10:30	3	4	days	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2738661 were received on 31-OCT-22 13:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

Quality Control Report

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2738661-COFC

COC Number: 17 - 744469

Page 1 of 2

Report To	Contact and company name below will appear on the final report
Company:	STANTEC CONSULTING
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500-311 Portage Ave
City/Province:	Wpg, MB
Postal Code:	R3B 3B9
Invoice To	Same as Report To ☐ YES ☒ NO
	Copy of Invoice with Report ☐ YES ☒ NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	☐ PDF ☒ EXCEL ☒ EDD (DIGITAL)
Quality Control (QC) Report with Report	☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Karen.Mathers@Stantec.com
Email 2	Brad.Horne@Stantec.com
Email 3	Jeremy.Jackson@Stantec.com

Invoice Distribution	
Select Invoice Distribution:	☒ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	

Project Information	
ALS Account # / Quote #:	Q288846
Job #:	ALAMOS
PO / AFE:	
LSD:	
ALS Lab Work Order # (lab use only):	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: J.D.	Sampler: BE, AR

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BALK-SPEC-LVP, ACV-TITR-TO	ANIONS-F-L-IC-LVP	C-DOC-HTCLP, C-TOC-HTC-LVP	HG-D-CVAF-VA	HGT-U-CVAF-VA	MET-D-CCMS-LVP, HARDNESS	MET-T-CCMS-LVP	NH3-COL-LVP	P-T-COL-LVP	N-TOTKJD-LVP	SOLIDS-TDISS-LR-LVP	MEHG-D-CVAF-VA, MEHG-TCVAF	CN-T-L, CN-FREE-L, CN-WAD-L	CR-CR6-DW, CR6-IC-LJT	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
1	AQF45	27-OCT-22	0957	W	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
2	AQF40	"	1050	"	11																
3	AQM71	28-OCT-22	1124	W	11																
4	AQM88	"	1153	"	11																
5	AQM89	"	1210	"	11																
6	AQM72	"	1253	"	11																
7	AQM73	"	1313	"	11																
8	AQM74	"	1334	"	11																
9	AQF75	"	1424	"	11																
10	AQF88	"	1441	"	11																
11	AQF41	"	1504	"	11																
12	AQF42	"	1522	"	11																

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	all dissolved bottles field filtered, both diss/total metals bottles preserved. Please sample TRIP + FIELD BLANKS for proper analysis, unsure of what to check
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
5.8							

SHIPMENT RELEASE (client use)		
Released by: B. Hynd	Date: Oct. 30/22	Time:

INITIAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date: OCT 31 2022	Time: 1:45

FINAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2738661-COFC

COC Number: 17 - 744470

Page 2 of 2

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	STANTEC CONSULTING	Select Report Format: ☐ PDF ☒ EXCEL ☒ EDD (DIGITAL)	Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Karen Mathews	Quality Control (QC) Report with Report ☐ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:	204-928-7621	☐ Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
	Company address below will appear on the final report	Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:	500-311 Portage Ave	Email 1 or Fax: Karen.mathews@stantec.com	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Winnipeg MB	Email 2: Brad.Nurse@stantec.com	
Postal Code:	R3B 2B9	Email 3: Jeremy.Jackson@stantec.com	
Invoice To	Same as Report To ☐ YES ☒ NO	**Invoice Distribution**	**Analysis Request**
	Copy of Invoice with Report ☐ YES ☒ NO	Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q88846	AFE/Cost Center:	PO#
Job #:	ALAMOS	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact: J.D.	Sampler: BB, AR

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BAK-SPEC-UP ACY-TITR-TR	ANIONS-L-IC-UP	C-DOC-HTS-UP C-TOC-HTS-UP	HG-D-U-CVAF-VA	HG-T-U-CVAF-VA	MET-D-CCMS-UP HARDNESS	MET-T-CCMS-UP	NHS-COL-UP	PT-COL-UP	N-TOTKS-UP	SOLIDS-TOTSOS-LR-UP	MEHG-D-CVAF-VA MEHG-T-CVAF	CN-FREE-L CN-WAD-L	CR-CR6-PWSD-IC-UT	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
13	AQF43	28.10.22	1540	W	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
14	AQF44	"	1556	"	11	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
15	AQF46	"	1607	"	11	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
16	FIELD BLANK	29.10.22	0807	"	8																
17	QC-01	29.10.22	—	"	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
18	TRIP BLANK	—	—	"	8																

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	all dissolved bottles field filtered, both diss/total metals bottles preserved
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
5.8							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: B. Lynd	Date: Oct. 30/22	Time:	Received by:	Date: OCT 31 2022	Time: 1:45	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Alamos Gold Inc.
ATTN: KAREN MATHERS
C/O Stantec Consulting
500 - 311 Portage Avenue
Winnipeg MB R3B 2B9

Date Received: 18-NOV-22
Report Date: 08-DEC-22 13:51 (MT)
Version: FINAL

Client Phone: 204-924-5735

Certificate of Analysis

Lab Work Order #: L2740826

Project P.O. #: NOT SUBMITTED
Job Reference: ALAMOS
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2740826-1 W 16-NOV-22 09:19 AQM28	L2740826-2 W 16-NOV-22 09:45 AQM29C	L2740826-3 W 16-NOV-22 10:04 AQM71	L2740826-4 W 16-NOV-22 10:20 AQM72	L2740826-5 W 16-NOV-22 10:46 AQM73
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	22.1	11.7	68.4	9.78	17.7
	Total Suspended Solids (mg/L)	<1.0	2.6	<1.0	2.0	3.0
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	4.3	3.4	10.6	12.2	4.2
	Alkalinity, Total (as CaCO3) (mg/L)	11.1	9.3	47.6	10.2	16.5
	Ammonia, Total (as N) (mg/L)	<0.010	0.012	0.022	0.017	0.021
	Bicarbonate (HCO3) (mg/L)	13.5	11.3	58.1	12.4	20.1
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	1.32	0.48	1.25	0.11	0.31
	Fluoride (F) (mg/L)	0.054	0.053	0.035	0.028	0.043
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	0.0106	0.0141	0.0143	<0.0051	0.0117
	Nitrate (as N) (mg/L)	0.0106	0.0141	0.0143	<0.0050	0.0117
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.35	0.24	0.32	0.31	0.45
	Phosphorus (P)-Total (mg/L)	0.0161	0.0161	0.0150	0.0200	0.0221
	Sulfate (SO4) (mg/L)	8.94	2.99	16.1	<0.30	0.72
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	11.8	8.69	14.9	15.2	13.1
	Total Organic Carbon (mg/L)	12.4	9.86	15.7	14.8	14.1
Total Metals	Aluminum (Al)-Total (mg/L)	0.179	0.0686	0.0550	0.108	0.0788
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	0.00014	0.00017	<0.00010
	Arsenic (As)-Total (mg/L)	0.00023	0.00017	0.00023	0.00029	0.00025
	Barium (Ba)-Total (mg/L)	0.00779	0.00624	0.0123	0.0124	0.00828
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.0000179	0.0000075	0.0000058	0.000248	0.0000059
	Calcium (Ca)-Total (mg/L)	6.02	3.14	22.5	3.36	5.14
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00037	0.00015		0.00056	0.00021
	Cobalt (Co)-Total (mg/L)	0.00079	0.00021	0.00023	0.00028	<0.00010
	Copper (Cu)-Total (mg/L)	0.00396	0.00157	0.00125	0.00500	0.00145
	Iron (Fe)-Total (mg/L)	0.863	0.339	0.316	1.85	0.213

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2740826-6	L2740826-7	L2740826-8	L2740826-9	L2740826-10
Description	W	W	W	W	W
Sampled Date	16-NOV-22	16-NOV-22	16-NOV-22	16-NOV-22	16-NOV-22
Sampled Time	11:06	11:54	12:14	12:33	12:57
Client ID	AQM74	AQF7S	AQF38	AQF41	AQF40
Grouping / **Analyte**					
WATER					
Physical Tests Hardness (as CaCO3) (mg/L)	16.1	17.2	21.6	10.3	10.5
Total Suspended Solids (mg/L)	<1.0	1.0	1.2	1.0	2.7
Anions and Nutrients Acidity (as CaCO3) (mg/L)	9.0	2.8	4.2	3.1	3.1
Alkalinity, Total (as CaCO3) (mg/L)	11.1	17.3	22.6	11.4	11.0
Ammonia, Total (as N) (mg/L)	0.058	0.046	0.014	<0.010	0.013
Bicarbonate (HCO3) (mg/L)	13.5	21.1	27.6	13.9	13.4
Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
Chloride (Cl) (mg/L)	0.26	0.14	0.12	0.24	0.21
Fluoride (F) (mg/L)	0.042	0.045	0.081	0.061	0.061
Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
Nitrate and Nitrite as N (mg/L)	0.0064	0.0385	<0.0051	0.0324	0.0243
Nitrate (as N) (mg/L)	0.0064	0.0385	<0.0050	0.0324	0.0243
Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen (mg/L)	0.47	0.27	0.35	0.22	0.23
Phosphorus (P)-Total (mg/L)	0.0302	0.0129	0.0167	0.0167	0.0192
Sulfate (SO4) (mg/L)	<0.30	0.82	<0.30	0.55	0.50
Cyanides Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	25.2	9.97	11.0	8.91	9.07
Total Organic Carbon (mg/L)	27.4	10.8	12.1	9.15	10.2
Total Metals Aluminum (Al)-Total (mg/L)	0.0816	0.0261	0.0365	0.0365	0.0824
Antimony (Sb)-Total (mg/L)	0.00013	0.00012	0.00011	<0.00010	<0.00010
Arsenic (As)-Total (mg/L)	0.00043	0.00024	0.00022	0.00018	0.00019
Barium (Ba)-Total (mg/L)	0.00487	0.00875	0.00982	0.00518	0.00831
Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Total (mg/L)	0.0000056	0.0000069	0.0000144	<0.0000050	0.0000124
Calcium (Ca)-Total (mg/L)	5.24	4.76	6.44	3.08	3.12
Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Total (mg/L)	0.00026	0.00022	0.00018	0.00014	0.00030
Cobalt (Co)-Total (mg/L)	0.00028	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	0.00117	<0.00050	0.00067
Iron (Fe)-Total (mg/L)	0.728	0.078	0.071	0.194	0.299

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2740826-11 W 16-NOV-22 13:18 AQF42	L2740826-12 W 16-NOV-22 13:37 AQF45	L2740826-13 W 16-NOV-22 13:37 QC-01	L2740826-14 W 17-NOV-22 09:08 AQF46	L2740826-15 W 17-NOV-22 09:27 AQF43
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	11.2	12.5 HTD	20.1	35.0	10.8
	Total Suspended Solids (mg/L)	35.3	1.5	2.5	<1.0	1.1
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.3	3.2	4.3	6.0	3.5
	Alkalinity, Total (as CaCO3) (mg/L)	11.5	12.9	11.6	34.2	11.1
	Ammonia, Total (as N) (mg/L)	0.019	<0.010	<0.010	0.055	0.031
	Bicarbonate (HCO3) (mg/L)	14.0	15.7	14.2	41.7	13.5
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	<0.60
	Chloride (Cl) (mg/L)	0.28	0.25	0.85	0.20	0.21
	Fluoride (F) (mg/L)	0.061	0.063	0.053	0.045	0.062
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	<0.34
	Nitrate and Nitrite as N (mg/L)	0.0248	0.0296	0.0116	0.0412	0.0268
	Nitrate (as N) (mg/L)	0.0248	0.0296	0.0116	0.0412	0.0268
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.28	<0.20	0.22	0.41	0.20
	Phosphorus (P)-Total (mg/L)	0.0192	0.0134	0.0142	0.0121	0.0151
	Sulfate (SO4) (mg/L)	0.71	0.63	8.79	0.69	0.51
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	9.35	9.77	13.5	14.1	9.72
	Total Organic Carbon (mg/L)	9.59	9.92	12.9	14.2	9.94
Total Metals	Aluminum (Al)-Total (mg/L)	0.158	0.0473	0.173	0.0269	0.0402
	Antimony (Sb)-Total (mg/L)	0.00013	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00021	0.00019	0.00025	0.00027	0.00016
	Barium (Ba)-Total (mg/L)	0.0144	0.00549	0.00753	0.0100	0.00527
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.0000306	<0.0000050	0.0000164	0.0000051	<0.0000050
	Calcium (Ca)-Total (mg/L)	3.30	3.55	6.20	10.9	3.13
	Cesium (Cs)-Total (mg/L)	0.000019	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total (mg/L)	0.00076	0.00017	0.00038	0.00014	0.00016
	Cobalt (Co)-Total (mg/L)	0.00012	<0.00010	0.00070	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	0.00091	<0.00050	0.00398	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.421	0.207	0.900	0.101	0.206

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2740826-16	L2740826-17			
	Description	W	W			
	Sampled Date	17-NOV-22	17-NOV-22			
	Sampled Time	09:48	10:24			
	Client ID	AQF44	FEILD BLANK			
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	12.2	<0.20			
	Total Suspended Solids (mg/L)	1.9	<1.0			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.7	2.6			
	Alkalinity, Total (as CaCO3) (mg/L)	13.2	<1.0			
	Ammonia, Total (as N) (mg/L)	<0.010	<0.010			
	Bicarbonate (HCO3) (mg/L)	16.1	<1.2			
	Bromide (Br) (mg/L)	<0.10	<0.10			
	Carbonate (CO3) (mg/L)	<0.60	<0.60			
	Chloride (Cl) (mg/L)	0.23	<0.10			
	Fluoride (F) (mg/L)	0.062	<0.020			
	Hydroxide (OH) (mg/L)	<0.34	<0.34			
	Nitrate and Nitrite as N (mg/L)	0.0285	<0.0051			
	Nitrate (as N) (mg/L)	0.0285	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.25	<0.20			
	Phosphorus (P)-Total (mg/L)	0.0148	<0.0010			
	Sulfate (SO4) (mg/L)	0.59	<0.30			
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010			
	Cyanide, Total (mg/L)	<0.0010	<0.0010			
	Cyanide, Free (mg/L)	<0.0010	<0.0010			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	10.1	0.88			
	Total Organic Carbon (mg/L)	9.92	<0.50 RRV			
Total Metals	Aluminum (Al)-Total (mg/L)	0.0836	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00020	<0.00010			
	Barium (Ba)-Total (mg/L)	0.00584	<0.00010			
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010			
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050			
	Boron (B)-Total (mg/L)	<0.010	<0.010			
	Cadmium (Cd)-Total (mg/L)	0.0000106	<0.0000050			
	Calcium (Ca)-Total (mg/L)	3.42	<0.050			
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010			
	Chromium (Cr)-Total (mg/L)	0.00028	<0.00010			
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010			
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050			
	Iron (Fe)-Total (mg/L)	0.265	<0.010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2740826-1 W 16-NOV-22 09:19 AQM28	L2740826-2 W 16-NOV-22 09:45 AQM29C	L2740826-3 W 16-NOV-22 10:04 AQM71	L2740826-4 W 16-NOV-22 10:20 AQM72	L2740826-5 W 16-NOV-22 10:46 AQM73
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	0.000063	<0.000050	0.000082	0.000473	0.000120
	Lithium (Li)-Total (mg/L)	0.0012	0.0011	0.0013	0.0012	<0.0010
	Magnesium (Mg)-Total (mg/L)	1.41	0.858	2.43	0.762	1.20
	Manganese (Mn)-Total (mg/L)	0.0320	0.0145	0.243	0.0664	0.0345
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	0.000075	<0.000050	0.000052	0.000091	0.000123
	Nickel (Ni)-Total (mg/L)	0.0622	0.0159	<0.00050	0.00080	<0.00050
	Phosphorus (P)-Total (mg/L)	0.032	<0.030	<0.030	<0.030	0.039
	Potassium (K)-Total (mg/L)	0.757	0.585	1.02	0.144	0.627
	Rubidium (Rb)-Total (mg/L)	0.00095	0.00099	0.00109	0.00033	0.00082
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	3.33	2.95	6.65	2.93	0.90
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	1.51	1.12	2.04	0.701	1.12
	Strontium (Sr)-Total (mg/L)	0.0198	0.0136	0.0329	0.00945	0.0126
	Sulfur (S)-Total (mg/L)	3.38	1.05	6.37	<0.50	<0.50
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00011	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00156	0.00126	0.00147	0.00297	0.00170
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	0.000027	0.000025	0.000014	0.000019	0.000022
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	0.0152	0.0044	<0.0030	0.0101	0.0039
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.126	0.0402	0.0373	0.0535	0.0367
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00030	0.00025	0.00036	0.00028	0.00029
	Barium (Ba)-Dissolved (mg/L)	0.00706	0.00559	0.0113	0.00514	0.00641
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000149	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	6.14	3.31	22.9	2.91	5.14
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2740826-6	L2740826-7	L2740826-8	L2740826-9	L2740826-10
	Description	W	W	W	W	W
	Sampled Date	16-NOV-22	16-NOV-22	16-NOV-22	16-NOV-22	16-NOV-22
	Sampled Time	11:06	11:54	12:14	12:33	12:57
	Client ID	AQM74	AQF7S	AQF38	AQF41	AQF40
Grouping	**Analyte**					
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	0.000060	<0.000050	0.000072	<0.000050	0.000098
	Lithium (Li)-Total (mg/L)	0.0014	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Total (mg/L)	1.01	1.67	1.64	0.870	0.932
	Manganese (Mn)-Total (mg/L)	0.0574	0.00700	0.0211	0.00927	0.0203
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000093	0.00196	0.000084	0.000102
	Nickel (Ni)-Total (mg/L)	0.00055	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	0.031	<0.030	<0.030	0.031	0.043
	Potassium (K)-Total (mg/L)	0.078	0.650	0.570	0.506	0.547
	Rubidium (Rb)-Total (mg/L)	<0.00020	0.00111	0.00077	0.00101	0.00116
	Selenium (Se)-Total (mg/L)	<0.000050	0.000051	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total (mg/L)	5.32	1.10	1.65	2.60	2.78
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	0.966	1.14	1.18	1.06	1.09
	Strontium (Sr)-Total (mg/L)	0.0119	0.0148	0.0165	0.0126	0.0130
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00080	0.00050	0.00061	0.00091	0.00394
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total (mg/L)	<0.000010	0.000011	0.000014	0.000025	0.000041
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	0.0046
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0779	0.0183	0.0153	0.0192	0.0223
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00038	0.00020	0.00020	0.00015	0.00016
	Barium (Ba)-Dissolved (mg/L)	0.00494	0.00786	0.00817	0.00468	0.00471
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000070	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	4.96	4.41	6.20	2.79	2.87
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2740826-11	L2740826-12	L2740826-13	L2740826-14	L2740826-15
Description	W	W	W	W	W
Sampled Date	16-NOV-22	16-NOV-22	16-NOV-22	17-NOV-22	17-NOV-22
Sampled Time	13:18	13:37	13:37	09:08	09:27
Client ID	AQF42	AQF45	QC-01	AQF46	AQF43
Grouping / **Analyte**					
WATER					
Total Metals Lead (Pb)-Total (mg/L)	0.000142	<0.000050	0.000060	<0.000050	<0.000050
Lithium (Li)-Total (mg/L)	0.0011	<0.0010	0.0010	<0.0010	<0.0010
Magnesium (Mg)-Total (mg/L)	0.992	1.06	1.45	2.14	0.944
Manganese (Mn)-Total (mg/L)	0.0742	0.0108	0.0294	0.0176	0.0102
Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total (mg/L)	0.000138	0.000103	0.000069	0.000077	0.000094
Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	0.0633	<0.00050	<0.00050
Phosphorus (P)-Total (mg/L)	<0.030	<0.030	0.033	<0.030	<0.030
Potassium (K)-Total (mg/L)	0.578	0.558	0.789	0.806	0.536
Rubidium (Rb)-Total (mg/L)	0.00127	0.00095	0.00094	0.00107	0.00099
Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000053
Silicon (Si)-Total (mg/L)	2.75	2.65	3.23	1.26	2.83
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	1.10	1.16	1.53	1.22	1.12
Strontium (Sr)-Total (mg/L)	0.0140	0.0146	0.0191	0.0188	0.0135
Sulfur (S)-Total (mg/L)	<0.50	<0.50	3.18	<0.50	<0.50
Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total (mg/L)	0.00017	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total (mg/L)	0.00788	0.00128	0.00138	0.00069	0.00098
Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total (mg/L)	0.000089	0.000028	0.000025	0.000013	0.000025
Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	0.0044	<0.0030	0.0152	<0.0030	<0.0030
Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.0319	0.0197	0.120	0.0213	0.0181
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00015	0.00015	0.00021	0.00026	0.00015
Barium (Ba)-Dissolved (mg/L)	0.0149	0.00486	0.00685	0.00915	0.00476
Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	0.0000154	<0.0000050	<0.0000050
Calcium (Ca)-Dissolved (mg/L)	3.04	3.39	5.87	10.7	2.94
Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2740826-16	L2740826-17			
	Description	W	W			
	Sampled Date	17-NOV-22	17-NOV-22			
	Sampled Time	09:48	10:24			
	Client ID	AQF44	FEILD BLANK			
Grouping	**Analyte**					
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0010	<0.0010			
	Magnesium (Mg)-Total (mg/L)	1.08	<0.0050			
	Manganese (Mn)-Total (mg/L)	0.0152	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.000098	<0.000050			
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050			
	Phosphorus (P)-Total (mg/L)	<0.030	<0.030			
	Potassium (K)-Total (mg/L)	0.567	<0.050			
	Rubidium (Rb)-Total (mg/L)	0.00101	<0.00020			
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050			
	Silicon (Si)-Total (mg/L)	2.97	<0.10			
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Total (mg/L)	1.16	<0.050			
	Strontium (Sr)-Total (mg/L)	0.0140	<0.00020			
	Sulfur (S)-Total (mg/L)	<0.50	<0.50			
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020			
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010			
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010			
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Total (mg/L)	0.00267	<0.00030			
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010			
	Uranium (U)-Total (mg/L)	0.000030	<0.000010			
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030			
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020			
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0334	<0.0010			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00016	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.00509	<0.00010			
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	3.30	<0.050			
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	<0.000010			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2740826-1 W 16-NOV-22 09:19 AQM28	L2740826-2 W 16-NOV-22 09:45 AQM29C	L2740826-3 W 16-NOV-22 10:04 AQM71	L2740826-4 W 16-NOV-22 10:20 AQM72	L2740826-5 W 16-NOV-22 10:46 AQM73
WATER						
Dissolved Metals	Chromium (Cr)-Dissolved (mg/L)	0.00018	0.00011	0.00011	0.00017	0.00013
	Cobalt (Co)-Dissolved (mg/L)	0.00053	0.00015	0.00021	0.00022	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00327	0.00247	0.00213	0.00029	0.00060
	Iron (Fe)-Dissolved (mg/L)	0.589	0.192	0.240	1.37	0.087
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000089	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0010	0.0010	0.0011	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	1.63	0.843	2.71	0.610	1.19
	Manganese (Mn)-Dissolved (mg/L)	0.0201	0.00793	0.236	0.0618	0.0190
	Molybdenum (Mo)-Dissolved (mg/L)	0.000078	<0.000050	0.000118	<0.000050	0.000120
	Nickel (Ni)-Dissolved (mg/L)	0.0614	0.0157	0.00053	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.672	0.544	0.944	0.115	0.571
	Rubidium (Rb)-Dissolved (mg/L)	0.00086	0.00091	0.00105	0.00026	0.00079
	Selenium (Se)-Dissolved (mg/L)	0.000053	0.000052	0.000056	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	3.17	2.83	6.81	2.87	0.762
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.57	1.20	2.07	0.763	1.21
	Strontium (Sr)-Dissolved (mg/L)	0.0176	0.0116	0.0309	0.00793	0.0115
	Sulfur (S)-Dissolved (mg/L)	3.35	1.06	6.10	<0.50	0.62
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00018	0.00011
	Titanium (Ti)-Dissolved (mg/L)	0.00066	0.00033	0.00061	0.00109	0.00050
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.000020	0.000017	<0.000010	<0.000010	0.000017
	Vanadium (V)-Dissolved (mg/L)	0.00076	0.00070	0.00065	0.00072	0.00059
	Zinc (Zn)-Dissolved (mg/L)	0.0139	0.0064	0.0033	0.0020	0.0023
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals	Chromium, Hexavalent (ug/L)	0.77	0.50	<0.50	0.52	<0.50

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2740826-6 W 16-NOV-22 11:06 AQM74	L2740826-7 W 16-NOV-22 11:54 AQF7S	L2740826-8 W 16-NOV-22 12:14 AQF38	L2740826-9 W 16-NOV-22 12:33 AQF41	L2740826-10 W 16-NOV-22 12:57 AQF40
WATER						
Dissolved Metals	Chromium (Cr)-Dissolved (mg/L)	0.00019	<0.00010	<0.00010	<0.00010	0.00015
	Cobalt (Co)-Dissolved (mg/L)	0.00023	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00712 RRV	0.00412 RRV	0.00540 RRV	0.00410 RRV	0.00504 RRV
	Iron (Fe)-Dissolved (mg/L)	0.660	0.056	0.057	0.120	0.138
	Lead (Pb)-Dissolved (mg/L)	0.000337 RRV	0.000165 RRV	0.000166	0.000146	0.000180
	Lithium (Li)-Dissolved (mg/L)	0.0013	<0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.906	1.51	1.48	0.810	0.815
	Manganese (Mn)-Dissolved (mg/L)	0.0532	0.00414	0.00167	0.00266	0.00449
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000144	0.00199	0.000076	0.000090
	Nickel (Ni)-Dissolved (mg/L)	0.00058	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.074	0.595	0.523	0.484	0.525
	Rubidium (Rb)-Dissolved (mg/L)	<0.00020	0.00099	0.00080	0.00096	0.00095
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	4.74	1.02	1.51	2.39	2.41
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.874	1.03	1.07	0.979	1.00
	Strontium (Sr)-Dissolved (mg/L)	0.0112	0.0140	0.0164	0.0121	0.0128
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	0.00015	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00059	<0.00030	<0.00030	<0.00030	0.00034
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000015	0.000018
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0079	0.0052	0.0065	0.0043	0.0103
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals	Chromium, Hexavalent (ug/L)	0.67	0.87	<0.50	<0.50	<0.50

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2740826-11 W 16-NOV-22 13:18 AQF42	L2740826-12 W 16-NOV-22 13:37 AQF45	L2740826-13 W 16-NOV-22 13:37 QC-01	L2740826-14 W 17-NOV-22 09:08 AQF46	L2740826-15 W 17-NOV-22 09:27 AQF43
WATER						
Dissolved Metals	Chromium (Cr)-Dissolved (mg/L)	0.00078	<0.00010	0.00015	<0.00010	0.00011
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	0.00049	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00152	0.00418 RRV	0.00312	0.00033	0.00509 RRV
	Iron (Fe)-Dissolved (mg/L)	0.193	0.114	0.555	0.079	0.105
	Lead (Pb)-Dissolved (mg/L)	0.000066	0.000159 RRV	0.000051	<0.000050	0.00626 RRV
	Lithium (Li)-Dissolved (mg/L)	0.0010	0.0010	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	0.866	0.969	1.31	2.04	0.848
	Manganese (Mn)-Dissolved (mg/L)	0.0200	0.00279	0.0194	0.0160	0.00224
	Molybdenum (Mo)-Dissolved (mg/L)	0.000903 RRV	0.000150	<0.000050	0.000054	0.000087
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.0571	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Potassium (K)-Dissolved (mg/L)	0.512	0.522	0.667	0.775	0.490
	Rubidium (Rb)-Dissolved (mg/L)	0.00098	0.00089	0.00095	0.00099	0.00088
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)	2.28	2.40	2.85	1.13	2.41
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.00	1.05	1.29	1.14	1.00
	Strontium (Sr)-Dissolved (mg/L)	0.0130	0.0137	0.0187	0.0178	0.0133
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	2.73	2.87 RRV	<0.50
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00102	<0.00030	0.00059	0.00039	0.00031
	Tungsten (W)-Dissolved (mg/L)	0.00092 RRV	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Dissolved (mg/L)	0.000059	0.000019	0.000015	<0.000010	0.000017
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0033	0.0060	0.0120	<0.0010	0.0048
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Speciated Metals	Chromium, Hexavalent (ug/L)	<0.50	0.52	0.57	0.58	<0.50

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2740826-16	L2740826-17			
	Description	W	W			
	Sampled Date	17-NOV-22	17-NOV-22			
	Sampled Time	09:48	10:24			
	Client ID	AQF44	FEILD BLANK			
Grouping	**Analyte**					
WATER						
Dissolved Metals	Chromium (Cr)-Dissolved (mg/L)	0.00013	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	0.00457 RRV	0.00197 RRV			
	Iron (Fe)-Dissolved (mg/L)	0.135	0.014			
	Lead (Pb)-Dissolved (mg/L)	0.000167 RRV	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0011	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	0.964	<0.0050			
	Manganese (Mn)-Dissolved (mg/L)	0.00534	0.00023			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000092	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030			
	Potassium (K)-Dissolved (mg/L)	0.506	<0.050			
	Rubidium (Rb)-Dissolved (mg/L)	0.00098	<0.00020			
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	2.47	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	1.03	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	0.0131	<0.00010			
	Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50			
	Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010			
	Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	0.00050	<0.00030			
	Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010			
	Uranium (U)-Dissolved (mg/L)	0.000018	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0050	0.0027			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020			
Speciated Metals	Chromium, Hexavalent (ug/L)	0.51	<0.50			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Dissolved Organic Carbon	MS-B	L2740826-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2740826-1, -2, -3, -4, -5
Matrix Spike	Boron (B)-Dissolved	MS-B	L2740826-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2740826-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2740826-10, -11, -12, -13, -14, -15, -16, -17, -6, -7, -8, -9
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2740826-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2740826-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2740826-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2740826-10, -11, -12, -13, -14, -15, -16, -17, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2740826-1, -2, -3, -4, -5
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2740826-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2740826-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2740826-1, -2, -3, -4, -5
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2740826-1, -2, -3, -4, -5
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2740826-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Total	MS-B	L2740826-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Copper (Cu)-Total	MS-B	L2740826-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2740826-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L2740826-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2740826-1, -10, -11, -12, -13, -14, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Ammonia, Total (as N)	MS-B	L2740826-15, -3

Qualifiers for Individual Parameters Listed:

Qualifier	Description
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-TITR-TB	Water	Acidity	APHA 2310 B modified

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

Reference Information

BR-IC-N-WP	Water	Bromide in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

C-TOC-HTC-WP	Water	Total Organic Carbon by Combustion	APHA 5310 B-WP

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-L-CFA-WT	Water	Low Level Free Cyanide in water by CFA	ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-WT	Water	Low Level Total Cyanide in water by CFA	ISO 14403-2:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, however it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-WT	Water	Low level WAD Cyanide in water by CFA	APHA 4500CN I-Weak acid Dist Colorimet

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

CR-CR6-PWQO-IC-WT	Water	Chromium +6	EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-T-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-D-CCMS-WP	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Reference Information

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-TOTKJ-WP	Water	Total Kjeldahl Nitrogen	APHA 4500 NorgD (modified)

Aqueous samples are digested in a block digester with sulfuric acid and copper sulfate as a catalyst. Total Kjeldahl Nitrogen is then analyzed using a discrete analyzer with colorimetric detection.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-L-IC-N-WP	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

P-T-L-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-LR-WP	Water	Total Suspended Solids	APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 Œ 105°C.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
TB	ALS ENVIRONMENTAL - THUNDER BAY, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Alamos Gold Inc.
C/O Stantec Consulting 500 - 311 Portage Avenue
Winnipeg MB R3B 2B9
Contact: KAREN MATHERS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACY-TITR-TB	**Water**							
Batch R5897902								
WG3773962-3 DUP		**L2740826-1**						
Acidity (as CaCO3)		4.3	4.2		mg/L	4.2	20	24-NOV-22
WG3773962-2 LCS								
Acidity (as CaCO3)			95.5		%		85-115	24-NOV-22
WG3773962-1 MB								
Acidity (as CaCO3)			<2.0		mg/L		3	24-NOV-22
ALK-TITR-WP	**Water**							
Batch R5895566								
WG3773605-14 LCS								
Alkalinity, Total (as CaCO3)			97.3		%		85-115	21-NOV-22
WG3773605-9 LCS								
Alkalinity, Total (as CaCO3)			99.1		%		85-115	21-NOV-22
WG3773605-11 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-NOV-22
WG3773605-6 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-NOV-22
Batch R5897036								
WG3773933-4 LCS								
Alkalinity, Total (as CaCO3)			99.2		%		85-115	23-NOV-22
WG3773933-1 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-NOV-22
BR-IC-N-WP	**Water**							
Batch R5895497								
WG3773354-3 DUP		**L2740826-1**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	19-NOV-22
WG3773354-2 LCS								
Bromide (Br)			102.3		%		85-115	19-NOV-22
WG3773354-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	19-NOV-22
WG3773354-4 MS		**L2740826-1**						
Bromide (Br)			102.5		%		75-125	19-NOV-22
C-DOC-HTC-WP	**Water**							
Batch R5900190								
WG3774715-3 DUP		**L2740826-15**						
Dissolved Organic Carbon		9.72	9.73		mg/L	0.1	20	29-NOV-22
WG3774715-2 LCS								
Dissolved Organic Carbon			96.9		%		80-120	29-NOV-22
WG3774715-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DOC-HTC-WP	**Water**							
Batch R5900190								
WG3774715-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-NOV-22
WG3774715-4 MS		**L2740826-16**						
Dissolved Organic Carbon			N/A	MS-B	%		-	29-NOV-22
Batch R5902877								
WG3775352-2 LCS								
Dissolved Organic Carbon			103.9		%		80-120	06-DEC-22
WG3775352-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	06-DEC-22
C-TOC-HTC-WP	**Water**							
Batch R5900189								
WG3774716-3 DUP		**L2740826-15**						
Total Organic Carbon		9.94	10.2		mg/L	2.9	20	28-NOV-22
WG3774716-2 LCS								
Total Organic Carbon			96.7		%		80-120	28-NOV-22
WG3774716-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	28-NOV-22
WG3774716-4 MS		**L2740826-16**						
Total Organic Carbon			92.8		%		70-130	28-NOV-22
Batch R5903599								
WG3775513-2 LCS								
Total Organic Carbon			108.7		%		80-120	08-DEC-22
WG3775513-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	08-DEC-22
CL-L-IC-N-WP	**Water**							
Batch R5895497								
WG3773354-3 DUP		**L2740826-1**						
Chloride (Cl)		1.32	1.31		mg/L	0.5	20	19-NOV-22
WG3773354-2 LCS								
Chloride (Cl)			101.0		%		90-110	19-NOV-22
WG3773354-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	19-NOV-22
WG3773354-4 MS		**L2740826-1**						
Chloride (Cl)			102.9		%		75-125	19-NOV-22
CN-FREE-L-CFA-WT	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-FREE-L-CFA-WT	**Water**							
Batch R5898480								
WG3774197-3 DUP		**L2740826-1**						
Cyanide, Free		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-NOV-22
WG3774197-2 LCS								
Cyanide, Free			97.5		%		80-120	25-NOV-22
WG3774197-1 MB								
Cyanide, Free			<0.0010		mg/L		0.001	25-NOV-22
WG3774197-4 MS		**L2740826-1**						
Cyanide, Free			109.0		%		75-125	25-NOV-22
CN-T-L-CFA-WT	**Water**							
Batch R5898480								
WG3774197-3 DUP		**L2740826-1**						
Cyanide, Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-NOV-22
WG3774197-2 LCS								
Cyanide, Total			91.5		%		80-120	25-NOV-22
WG3774197-1 MB								
Cyanide, Total			<0.0010		mg/L		0.001	25-NOV-22
WG3774197-4 MS		**L2740826-1**						
Cyanide, Total			94.9		%		70-130	25-NOV-22
CN-WAD-L-CFA-WT	**Water**							
Batch R5898480								
WG3774197-3 DUP		**L2740826-1**						
Cyanide, Weak Acid Diss		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-NOV-22
WG3774197-2 LCS								
Cyanide, Weak Acid Diss			103.8		%		80-120	25-NOV-22
WG3774197-1 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	25-NOV-22
WG3774197-4 MS		**L2740826-1**						
Cyanide, Weak Acid Diss			110.9		%		70-130	25-NOV-22
CR-CR6-PWQO-IC-WT	**Water**							
Batch R5897536								
WG3774129-2 LCS								
Chromium, Hexavalent			102.6		%		80-120	24-NOV-22
WG3774129-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	24-NOV-22
Batch R5897537								
WG3774130-2 LCS								
Chromium, Hexavalent			101.6		%		80-120	24-NOV-22
WG3774130-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-PWQO-IC-WT	**Water**							
Batch R5897537								
WG3774130-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	24-NOV-22
F-IC-N-WP	**Water**							
Batch R5895497								
WG3773354-3 DUP		**L2740826-1**						
Fluoride (F)		0.054	0.054		mg/L	0.4	20	19-NOV-22
WG3773354-2 LCS								
Fluoride (F)			105.3		%		90-110	19-NOV-22
WG3773354-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	19-NOV-22
WG3773354-4 MS		**L2740826-1**						
Fluoride (F)			108.2		%		75-125	19-NOV-22
HG-T-CVAA-WP	**Water**							
Batch R5896823								
WG3773876-2 LCS								
Mercury (Hg)-Total			101.1		%		80-120	23-NOV-22
WG3773876-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	23-NOV-22
Batch R5897382								
WG3774039-3 DUP		**L2740826-4**						
Mercury (Hg)-Total		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	24-NOV-22
WG3774039-2 LCS								
Mercury (Hg)-Total			96.8		%		80-120	24-NOV-22
WG3774039-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	24-NOV-22
WG3774039-4 MS		**L2740826-5**						
Mercury (Hg)-Total			105.2		%		70-130	24-NOV-22
MET-D-CCMS-WP	**Water**							
Batch R5896036								
WG3773439-6 LCS								
Aluminum (Al)-Dissolved			102.3		%		80-120	21-NOV-22
Antimony (Sb)-Dissolved			98.9		%		80-120	21-NOV-22
Arsenic (As)-Dissolved			102.0		%		80-120	21-NOV-22
Barium (Ba)-Dissolved			99.8		%		80-120	21-NOV-22
Beryllium (Be)-Dissolved			100.8		%		80-120	21-NOV-22
Bismuth (Bi)-Dissolved			100.7		%		80-120	21-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch	**R5896036**							
WG3773439-6	**LCS**							
Boron (B)-Dissolved			103.6		%		80-120	21-NOV-22
Cadmium (Cd)-Dissolved			101.0		%		80-120	21-NOV-22
Calcium (Ca)-Dissolved			101.1		%		80-120	21-NOV-22
Cesium (Cs)-Dissolved			93.9		%		80-120	21-NOV-22
Chromium (Cr)-Dissolved			102.5		%		80-120	21-NOV-22
Cobalt (Co)-Dissolved			101.2		%		80-120	21-NOV-22
Copper (Cu)-Dissolved			103.8		%		80-120	21-NOV-22
Iron (Fe)-Dissolved			94.0		%		80-120	21-NOV-22
Lead (Pb)-Dissolved			94.0		%		80-120	21-NOV-22
Lithium (Li)-Dissolved			97.3		%		80-120	21-NOV-22
Magnesium (Mg)-Dissolved			116.8		%		80-120	21-NOV-22
Manganese (Mn)-Dissolved			101.8		%		80-120	21-NOV-22
Molybdenum (Mo)-Dissolved			99.98		%		80-120	21-NOV-22
Nickel (Ni)-Dissolved			100.7		%		80-120	21-NOV-22
Phosphorus (P)-Dissolved			104.6		%		80-120	21-NOV-22
Potassium (K)-Dissolved			101.4		%		80-120	21-NOV-22
Rubidium (Rb)-Dissolved			101.4		%		80-120	21-NOV-22
Selenium (Se)-Dissolved			103.6		%		80-120	21-NOV-22
Silicon (Si)-Dissolved			104.4		%		80-120	21-NOV-22
Silver (Ag)-Dissolved			93.5		%		80-120	21-NOV-22
Sodium (Na)-Dissolved			102.6		%		80-120	21-NOV-22
Strontium (Sr)-Dissolved			92.7		%		80-120	21-NOV-22
Sulfur (S)-Dissolved			106.2		%		80-120	21-NOV-22
Tellurium (Te)-Dissolved			95.1		%		80-120	21-NOV-22
Thallium (Tl)-Dissolved			100.9		%		80-120	21-NOV-22
Thorium (Th)-Dissolved			87.7		%		80-120	21-NOV-22
Tin (Sn)-Dissolved			99.3		%		80-120	21-NOV-22
Titanium (Ti)-Dissolved			102.2		%		80-120	21-NOV-22
Tungsten (W)-Dissolved			99.3		%		80-120	21-NOV-22
Uranium (U)-Dissolved			93.6		%		80-120	21-NOV-22
Vanadium (V)-Dissolved			102.3		%		80-120	21-NOV-22
Zinc (Zn)-Dissolved			105.0		%		80-120	21-NOV-22
Zirconium (Zr)-Dissolved			81.4		%		80-120	21-NOV-22
WG3773439-5	**MB**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5896036								
WG3773439-5 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	21-NOV-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	21-NOV-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	21-NOV-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	21-NOV-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	21-NOV-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	21-NOV-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	21-NOV-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	21-NOV-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	21-NOV-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	21-NOV-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	21-NOV-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	21-NOV-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	21-NOV-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	21-NOV-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	21-NOV-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	21-NOV-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	21-NOV-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	21-NOV-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	21-NOV-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	21-NOV-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	21-NOV-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	21-NOV-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	21-NOV-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	21-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5896036								
WG3773439-5 MB								
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	21-NOV-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	21-NOV-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	21-NOV-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	21-NOV-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	21-NOV-22
Batch R5897897								
WG3773804-9 DUP		**L2740826-6**						
Aluminum (Al)-Dissolved		0.0779	0.0814		mg/L	4.3	20	23-NOV-22
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-NOV-22
Arsenic (As)-Dissolved		0.00038	0.00039		mg/L	1.9	20	23-NOV-22
Barium (Ba)-Dissolved		0.00494	0.00480		mg/L	3.0	20	23-NOV-22
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-NOV-22
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-NOV-22
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-NOV-22
Cadmium (Cd)-Dissolved		0.0000070	0.0000061		mg/L	13	20	23-NOV-22
Calcium (Ca)-Dissolved		4.96	5.15		mg/L	3.7	20	23-NOV-22
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-NOV-22
Chromium (Cr)-Dissolved		0.00019	0.00020		mg/L	8.2	20	23-NOV-22
Cobalt (Co)-Dissolved		0.00023	0.00023		mg/L	0.1	20	23-NOV-22
Iron (Fe)-Dissolved		0.660	0.664		mg/L	0.6	20	23-NOV-22
Lithium (Li)-Dissolved		0.0013	0.0014		mg/L	2.4	20	23-NOV-22
Magnesium (Mg)-Dissolved		0.906	0.914		mg/L	0.9	20	23-NOV-22
Manganese (Mn)-Dissolved		0.0532	0.0542		mg/L	1.8	20	23-NOV-22
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-NOV-22
Nickel (Ni)-Dissolved		0.00058	0.00059		mg/L	0.7	20	23-NOV-22
Phosphorus (P)-Dissolved		<0.030	<0.030	RPD-NA	mg/L	N/A	20	23-NOV-22
Potassium (K)-Dissolved		0.074	0.073		mg/L	1.2	20	23-NOV-22
Rubidium (Rb)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	23-NOV-22
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-NOV-22
Silicon (Si)-Dissolved		4.74	4.78		mg/L	0.9	20	23-NOV-22
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-NOV-22
Sodium (Na)-Dissolved		0.874	0.891		mg/L	1.9	20	23-NOV-22
Strontium (Sr)-Dissolved		0.0112	0.0118		mg/L	4.7	20	23-NOV-22
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	23-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5897897								
WG3773804-9 DUP		**L2740826-6**						
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	23-NOV-22
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-NOV-22
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-NOV-22
Tin (Sn)-Dissolved		0.00015	0.00014		mg/L	4.7	20	23-NOV-22
Titanium (Ti)-Dissolved		0.00059	0.00052		mg/L	14	20	23-NOV-22
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-NOV-22
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-NOV-22
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-NOV-22
Zinc (Zn)-Dissolved		0.0079	0.0082		mg/L	3.9	20	23-NOV-22
Zirconium (Zr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	23-NOV-22
WG3773804-2 LCS								
Aluminum (Al)-Dissolved			95.3		%		80-120	23-NOV-22
Antimony (Sb)-Dissolved			103.4		%		80-120	23-NOV-22
Arsenic (As)-Dissolved			97.6		%		80-120	23-NOV-22
Barium (Ba)-Dissolved			100.9		%		80-120	23-NOV-22
Beryllium (Be)-Dissolved			101.9		%		80-120	23-NOV-22
Bismuth (Bi)-Dissolved			107.9		%		80-120	23-NOV-22
Boron (B)-Dissolved			103.7		%		80-120	23-NOV-22
Cadmium (Cd)-Dissolved			99.4		%		80-120	23-NOV-22
Calcium (Ca)-Dissolved			100.4		%		80-120	23-NOV-22
Cesium (Cs)-Dissolved			103.6		%		80-120	23-NOV-22
Chromium (Cr)-Dissolved			97.7		%		80-120	23-NOV-22
Cobalt (Co)-Dissolved			97.6		%		80-120	23-NOV-22
Copper (Cu)-Dissolved			98.5		%		80-120	23-NOV-22
Iron (Fe)-Dissolved			91.5		%		80-120	23-NOV-22
Lead (Pb)-Dissolved			105.7		%		80-120	23-NOV-22
Lithium (Li)-Dissolved			104.0		%		80-120	23-NOV-22
Magnesium (Mg)-Dissolved			98.8		%		80-120	23-NOV-22
Manganese (Mn)-Dissolved			102.3		%		80-120	23-NOV-22
Molybdenum (Mo)-Dissolved			98.6		%		80-120	23-NOV-22
Nickel (Ni)-Dissolved			96.7		%		80-120	23-NOV-22
Phosphorus (P)-Dissolved			100.2		%		80-120	23-NOV-22
Potassium (K)-Dissolved			97.8		%		80-120	23-NOV-22
Rubidium (Rb)-Dissolved			96.5		%		80-120	23-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5897897								
WG3773804-2 LCS								
Selenium (Se)-Dissolved			93.6		%		80-120	23-NOV-22
Silicon (Si)-Dissolved			97.2		%		80-120	23-NOV-22
Silver (Ag)-Dissolved			101.7		%		80-120	23-NOV-22
Sodium (Na)-Dissolved			100.1		%		80-120	23-NOV-22
Strontium (Sr)-Dissolved			102.4		%		80-120	23-NOV-22
Sulfur (S)-Dissolved			95.0		%		80-120	23-NOV-22
Tellurium (Te)-Dissolved			101.1		%		80-120	23-NOV-22
Thallium (Tl)-Dissolved			105.0		%		80-120	23-NOV-22
Thorium (Th)-Dissolved			102.0		%		80-120	23-NOV-22
Tin (Sn)-Dissolved			102.3		%		80-120	23-NOV-22
Titanium (Ti)-Dissolved			95.8		%		80-120	23-NOV-22
Tungsten (W)-Dissolved			103.2		%		80-120	23-NOV-22
Uranium (U)-Dissolved			103.6		%		80-120	23-NOV-22
Vanadium (V)-Dissolved			98.2		%		80-120	23-NOV-22
Zinc (Zn)-Dissolved			94.3		%		80-120	23-NOV-22
Zirconium (Zr)-Dissolved			96.8		%		80-120	23-NOV-22
WG3773804-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-NOV-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-NOV-22
Cadmium (Cd)-Dissolved			<0.000005(		mg/L		0.000005	23-NOV-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-NOV-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-NOV-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-NOV-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5897897								
WG3773804-1 MB								
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-22
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	23-NOV-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-NOV-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-NOV-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-NOV-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	23-NOV-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-NOV-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-NOV-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-22
WG3773804-8 MS		**L2740826-6**						
Aluminum (Al)-Dissolved			72.6		%		70-130	23-NOV-22
Antimony (Sb)-Dissolved			86.4		%		70-130	23-NOV-22
Arsenic (As)-Dissolved			76.0		%		70-130	23-NOV-22
Barium (Ba)-Dissolved			79.4		%		70-130	23-NOV-22
Beryllium (Be)-Dissolved			85.9		%		70-130	23-NOV-22
Bismuth (Bi)-Dissolved			89.9		%		70-130	23-NOV-22
Boron (B)-Dissolved			85.9		%		70-130	23-NOV-22
Cadmium (Cd)-Dissolved			76.9		%		70-130	23-NOV-22
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	23-NOV-22
Cesium (Cs)-Dissolved			86.8		%		70-130	23-NOV-22
Chromium (Cr)-Dissolved			76.0		%		70-130	23-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5897897								
WG3773804-8 MS		**L2740826-6**						
Cobalt (Co)-Dissolved			75.1		%		70-130	23-NOV-22
Iron (Fe)-Dissolved			72.8		%		70-130	23-NOV-22
Lithium (Li)-Dissolved			85.9		%		70-130	23-NOV-22
Magnesium (Mg)-Dissolved			71.4		%		70-130	23-NOV-22
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	23-NOV-22
Molybdenum (Mo)-Dissolved			83.4		%		70-130	23-NOV-22
Nickel (Ni)-Dissolved			74.9		%		70-130	23-NOV-22
Phosphorus (P)-Dissolved			73.9		%		70-130	23-NOV-22
Potassium (K)-Dissolved			74.5		%		70-130	23-NOV-22
Rubidium (Rb)-Dissolved			78.8		%		70-130	23-NOV-22
Selenium (Se)-Dissolved			76.0		%		70-130	23-NOV-22
Silicon (Si)-Dissolved			74.8		%		70-130	23-NOV-22
Silver (Ag)-Dissolved			86.8		%		70-130	23-NOV-22
Sodium (Na)-Dissolved			74.9		%		70-130	23-NOV-22
Strontium (Sr)-Dissolved			87.8		%		70-130	23-NOV-22
Sulfur (S)-Dissolved			70.3		%		70-130	23-NOV-22
Tellurium (Te)-Dissolved			88.4		%		70-130	23-NOV-22
Thallium (Tl)-Dissolved			88.6		%		70-130	23-NOV-22
Thorium (Th)-Dissolved			92.2		%		70-130	23-NOV-22
Tin (Sn)-Dissolved			77.7		%		70-130	23-NOV-22
Titanium (Ti)-Dissolved			76.2		%		70-130	23-NOV-22
Tungsten (W)-Dissolved			87.2		%		70-130	23-NOV-22
Uranium (U)-Dissolved			89.4		%		70-130	23-NOV-22
Vanadium (V)-Dissolved			75.5		%		70-130	23-NOV-22
Zinc (Zn)-Dissolved			73.2		%		70-130	23-NOV-22
Zirconium (Zr)-Dissolved			86.4		%		70-130	23-NOV-22
MET-T-CCMS-WP	**Water**							
Batch R5898621								
WG3773944-2 LCS								
Aluminum (Al)-Total			104.9		%		80-120	24-NOV-22
Antimony (Sb)-Total			106.0		%		80-120	24-NOV-22
Arsenic (As)-Total			102.4		%		80-120	24-NOV-22
Barium (Ba)-Total			101.4		%		80-120	24-NOV-22
Beryllium (Be)-Total			106.8		%		80-120	24-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5898621								
WG3773944-2 LCS								
Bismuth (Bi)-Total			101.8		%		80-120	24-NOV-22
Boron (B)-Total			106.4		%		80-120	24-NOV-22
Cadmium (Cd)-Total			102.5		%		80-120	24-NOV-22
Calcium (Ca)-Total			104.0		%		80-120	24-NOV-22
Cesium (Cs)-Total			101.5		%		80-120	24-NOV-22
Chromium (Cr)-Total			104.8		%		80-120	24-NOV-22
Cobalt (Co)-Total			102.5		%		80-120	24-NOV-22
Copper (Cu)-Total			102.9		%		80-120	24-NOV-22
Iron (Fe)-Total			97.6		%		80-120	24-NOV-22
Lead (Pb)-Total			96.9		%		80-120	24-NOV-22
Lithium (Li)-Total			103.7		%		80-120	24-NOV-22
Magnesium (Mg)-Total			103.9		%		80-120	24-NOV-22
Manganese (Mn)-Total			104.0		%		80-120	24-NOV-22
Molybdenum (Mo)-Total			101.8		%		80-120	24-NOV-22
Nickel (Ni)-Total			101.4		%		80-120	24-NOV-22
Potassium (K)-Total			104.5		%		80-120	24-NOV-22
Phosphorus (P)-Total			108.8		%		80-120	24-NOV-22
Rubidium (Rb)-Total			102.7		%		80-120	24-NOV-22
Selenium (Se)-Total			97.3		%		80-120	24-NOV-22
Silicon (Si)-Total			104.2		%		80-120	24-NOV-22
Silver (Ag)-Total			101.7		%		80-120	24-NOV-22
Sodium (Na)-Total			105.8		%		80-120	24-NOV-22
Strontium (Sr)-Total			102.0		%		80-120	24-NOV-22
Sulfur (S)-Total			108.7		%		80-120	24-NOV-22
Tellurium (Te)-Total			100.7		%		80-120	24-NOV-22
Thallium (Tl)-Total			94.7		%		80-120	24-NOV-22
Thorium (Th)-Total			99.2		%		80-120	24-NOV-22
Tin (Sn)-Total			102.4		%		80-120	24-NOV-22
Titanium (Ti)-Total			99.0		%		80-120	24-NOV-22
Tungsten (W)-Total			100.7		%		80-120	24-NOV-22
Uranium (U)-Total			99.3		%		80-120	24-NOV-22
Vanadium (V)-Total			103.7		%		80-120	24-NOV-22
Zinc (Zn)-Total			99.2		%		80-120	24-NOV-22
Zirconium (Zr)-Total			101.7		%		80-120	24-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5898621								
WG3773944-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	24-NOV-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	24-NOV-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	24-NOV-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	24-NOV-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	24-NOV-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	24-NOV-22
Boron (B)-Total			<0.010		mg/L		0.01	24-NOV-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	24-NOV-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	24-NOV-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	24-NOV-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	24-NOV-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	24-NOV-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	24-NOV-22
Iron (Fe)-Total			<0.010		mg/L		0.01	24-NOV-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	24-NOV-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	24-NOV-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	24-NOV-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	24-NOV-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	24-NOV-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	24-NOV-22
Potassium (K)-Total			<0.050		mg/L		0.05	24-NOV-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	24-NOV-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	24-NOV-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	24-NOV-22
Silicon (Si)-Total			<0.10		mg/L		0.1	24-NOV-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	24-NOV-22
Sodium (Na)-Total			<0.050		mg/L		0.05	24-NOV-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	24-NOV-22
Sulfur (S)-Total			<0.50		mg/L		0.5	24-NOV-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	24-NOV-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	24-NOV-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	24-NOV-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	24-NOV-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	24-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5898621								
WG3773944-1 MB								
Tungsten (W)-Total			<0.00010		mg/L		0.0001	24-NOV-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	24-NOV-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	24-NOV-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	24-NOV-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	24-NOV-22
Batch R5900162								
WG3774146-4 DUP		**L2740826-17**						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	25-NOV-22
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-NOV-22
Arsenic (As)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-NOV-22
Barium (Ba)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-NOV-22
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-NOV-22
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-NOV-22
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-NOV-22
Cadmium (Cd)-Total		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	25-NOV-22
Calcium (Ca)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-NOV-22
Cesium (Cs)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-NOV-22
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-NOV-22
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-NOV-22
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-NOV-22
Iron (Fe)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-NOV-22
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-NOV-22
Lithium (Li)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-NOV-22
Magnesium (Mg)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-NOV-22
Manganese (Mn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-NOV-22
Molybdenum (Mo)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-NOV-22
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-NOV-22
Potassium (K)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-NOV-22
Phosphorus (P)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	25-NOV-22
Rubidium (Rb)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	25-NOV-22
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-NOV-22
Silicon (Si)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	25-NOV-22
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-NOV-22
Sodium (Na)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5900162								
WG3774146-4 DUP		**L2740826-17**						
Strontium (Sr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	25-NOV-22
Sulfur (S)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	25-NOV-22
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	25-NOV-22
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-NOV-22
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-NOV-22
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-NOV-22
Titanium (Ti)-Total		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	25-NOV-22
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-NOV-22
Uranium (U)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-NOV-22
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-NOV-22
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	25-NOV-22
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	25-NOV-22
WG3774146-2 LCS								
Aluminum (Al)-Total			103.0		%		80-120	25-NOV-22
Antimony (Sb)-Total			110.9		%		80-120	25-NOV-22
Arsenic (As)-Total			98.9		%		80-120	25-NOV-22
Barium (Ba)-Total			100.7		%		80-120	25-NOV-22
Beryllium (Be)-Total			103.2		%		80-120	25-NOV-22
Bismuth (Bi)-Total			107.0		%		80-120	25-NOV-22
Boron (B)-Total			105.9		%		80-120	25-NOV-22
Cadmium (Cd)-Total			97.9		%		80-120	25-NOV-22
Calcium (Ca)-Total			101.0		%		80-120	25-NOV-22
Cesium (Cs)-Total			106.9		%		80-120	25-NOV-22
Chromium (Cr)-Total			98.6		%		80-120	25-NOV-22
Cobalt (Co)-Total			96.3		%		80-120	25-NOV-22
Copper (Cu)-Total			101.1		%		80-120	25-NOV-22
Iron (Fe)-Total			96.5		%		80-120	25-NOV-22
Lead (Pb)-Total			106.8		%		80-120	25-NOV-22
Lithium (Li)-Total			105.4		%		80-120	25-NOV-22
Magnesium (Mg)-Total			99.9		%		80-120	25-NOV-22
Manganese (Mn)-Total			98.6		%		80-120	25-NOV-22
Molybdenum (Mo)-Total			102.4		%		80-120	25-NOV-22
Nickel (Ni)-Total			97.0		%		80-120	25-NOV-22
Potassium (K)-Total			100.6		%		80-120	25-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5900162								
WG3774146-2 LCS								
Phosphorus (P)-Total			102.5		%		80-120	25-NOV-22
Rubidium (Rb)-Total			101.3		%		80-120	25-NOV-22
Selenium (Se)-Total			101.8		%		80-120	25-NOV-22
Silicon (Si)-Total			101.3		%		80-120	25-NOV-22
Silver (Ag)-Total			103.9		%		80-120	25-NOV-22
Sodium (Na)-Total			103.3		%		80-120	25-NOV-22
Strontium (Sr)-Total			106.3		%		80-120	25-NOV-22
Sulfur (S)-Total			109.2		%		80-120	25-NOV-22
Tellurium (Te)-Total			105.7		%		80-120	25-NOV-22
Thallium (Tl)-Total			102.6		%		80-120	25-NOV-22
Thorium (Th)-Total			103.3		%		80-120	25-NOV-22
Tin (Sn)-Total			102.2		%		80-120	25-NOV-22
Titanium (Ti)-Total			95.6		%		80-120	25-NOV-22
Tungsten (W)-Total			102.6		%		80-120	25-NOV-22
Uranium (U)-Total			106.6		%		80-120	25-NOV-22
Vanadium (V)-Total			99.3		%		80-120	25-NOV-22
Zinc (Zn)-Total			95.2		%		80-120	25-NOV-22
Zirconium (Zr)-Total			106.0		%		80-120	25-NOV-22
WG3774146-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	25-NOV-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	25-NOV-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	25-NOV-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	25-NOV-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	25-NOV-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	25-NOV-22
Boron (B)-Total			<0.010		mg/L		0.01	25-NOV-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	25-NOV-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	25-NOV-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	25-NOV-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	25-NOV-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	25-NOV-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	25-NOV-22
Iron (Fe)-Total			<0.010		mg/L		0.01	25-NOV-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	25-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5900162								
WG3774146-1 MB								
Lithium (Li)-Total			<0.0010		mg/L		0.001	25-NOV-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	25-NOV-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	25-NOV-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	25-NOV-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	25-NOV-22
Potassium (K)-Total			<0.050		mg/L		0.05	25-NOV-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	25-NOV-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	25-NOV-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	25-NOV-22
Silicon (Si)-Total			<0.10		mg/L		0.1	25-NOV-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	25-NOV-22
Sodium (Na)-Total			<0.050		mg/L		0.05	25-NOV-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	25-NOV-22
Sulfur (S)-Total			<0.50		mg/L		0.5	25-NOV-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	25-NOV-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	25-NOV-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	25-NOV-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	25-NOV-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	25-NOV-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	25-NOV-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	25-NOV-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	25-NOV-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	25-NOV-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	25-NOV-22
WG3774146-5 MS		**L2740826-17**						
Aluminum (Al)-Total			106.9		%		70-130	25-NOV-22
Antimony (Sb)-Total			109.4		%		70-130	25-NOV-22
Arsenic (As)-Total			104.1		%		70-130	25-NOV-22
Barium (Ba)-Total			101.7		%		70-130	25-NOV-22
Beryllium (Be)-Total			106.2		%		70-130	25-NOV-22
Bismuth (Bi)-Total			111.4		%		70-130	25-NOV-22
Boron (B)-Total			108.8		%		70-130	25-NOV-22
Cadmium (Cd)-Total			105.1		%		70-130	25-NOV-22
Calcium (Ca)-Total			104.6		%		70-130	25-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5900162								
WG3774146-5 MS		**L2740826-17**						
Cesium (Cs)-Total			104.4		%		70-130	25-NOV-22
Chromium (Cr)-Total			107.7		%		70-130	25-NOV-22
Cobalt (Co)-Total			104.1		%		70-130	25-NOV-22
Copper (Cu)-Total			106.7		%		70-130	25-NOV-22
Iron (Fe)-Total			106.3		%		70-130	25-NOV-22
Lead (Pb)-Total			107.7		%		70-130	25-NOV-22
Lithium (Li)-Total			104.3		%		70-130	25-NOV-22
Magnesium (Mg)-Total			106.2		%		70-130	25-NOV-22
Manganese (Mn)-Total			103.1		%		70-130	25-NOV-22
Molybdenum (Mo)-Total			104.7		%		70-130	25-NOV-22
Nickel (Ni)-Total			107.4		%		70-130	25-NOV-22
Potassium (K)-Total			105.8		%		70-130	25-NOV-22
Phosphorus (P)-Total			101.7		%		70-130	25-NOV-22
Rubidium (Rb)-Total			104.0		%		70-130	25-NOV-22
Selenium (Se)-Total			116.0		%		70-130	25-NOV-22
Silicon (Si)-Total			109.0		%		70-130	25-NOV-22
Silver (Ag)-Total			106.4		%		70-130	25-NOV-22
Sodium (Na)-Total			107.0		%		70-130	25-NOV-22
Strontium (Sr)-Total			105.5		%		70-130	25-NOV-22
Sulfur (S)-Total			114.3		%		70-130	25-NOV-22
Tellurium (Te)-Total			106.2		%		70-130	25-NOV-22
Thallium (Tl)-Total			101.8		%		70-130	25-NOV-22
Thorium (Th)-Total			110.6		%		70-130	25-NOV-22
Tin (Sn)-Total			106.2		%		70-130	25-NOV-22
Titanium (Ti)-Total			105.3		%		70-130	25-NOV-22
Tungsten (W)-Total			104.2		%		70-130	25-NOV-22
Uranium (U)-Total			108.5		%		70-130	25-NOV-22
Vanadium (V)-Total			105.9		%		70-130	25-NOV-22
Zinc (Zn)-Total			103.0		%		70-130	25-NOV-22
Zirconium (Zr)-Total			107.2		%		70-130	25-NOV-22
N-TOTKJ-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
N-TOTKJ-WP	**Water**							
Batch R5897817								
WG3773766-10 LCS								
Total Kjeldahl Nitrogen			105.2		%		75-125	24-NOV-22
Batch R5901259								
WG3773931-3 DUP		**L2740826-15**						
Total Kjeldahl Nitrogen		0.20	<0.20	RPD-NA	mg/L	N/A	20	25-NOV-22
WG3773931-2 LCS								
Total Kjeldahl Nitrogen			100.5		%		75-125	25-NOV-22
WG3773931-1 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	25-NOV-22
WG3773931-4 MS		**L2740826-15**						
Total Kjeldahl Nitrogen			98.2		%		70-130	25-NOV-22
NH3-COL-WP	**Water**							
Batch R5898636								
WG3774248-7 DUP		**L2740826-1**						
Ammonia, Total (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	25-NOV-22
WG3774248-10 LCS								
Ammonia, Total (as N)			98.0		%		85-115	25-NOV-22
WG3774248-6 LCS								
Ammonia, Total (as N)			98.5		%		85-115	25-NOV-22
WG3774248-5 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	25-NOV-22
WG3774248-9 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	25-NOV-22
WG3774248-8 MS		**L2740826-1**						
Ammonia, Total (as N)			87.5		%		75-125	25-NOV-22
Batch R5899976								
WG3774577-2 LCS								
Ammonia, Total (as N)			102.9		%		85-115	29-NOV-22
WG3774577-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	29-NOV-22
NO2-L-IC-N-WP	**Water**							
Batch R5895497								
WG3773354-3 DUP		**L2740826-1**						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	19-NOV-22
WG3773354-2 LCS								
Nitrite (as N)			100.5		%		90-110	19-NOV-22
WG3773354-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-L-IC-N-WP	**Water**							
Batch R5895497								
WG3773354-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	19-NOV-22
WG3773354-4 MS		**L2740826-1**						
Nitrite (as N)			101.3		%		75-125	19-NOV-22
NO3-L-IC-N-WP	**Water**							
Batch R5895497								
WG3773354-3 DUP		**L2740826-1**						
Nitrate (as N)		0.0106	0.0105		mg/L	1.2	20	19-NOV-22
WG3773354-2 LCS								
Nitrate (as N)			101.9		%		90-110	19-NOV-22
WG3773354-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	19-NOV-22
WG3773354-4 MS		**L2740826-1**						
Nitrate (as N)			103.6		%		75-125	19-NOV-22
P-T-COL-WP	**Water**							
Batch R5896538								
WG3773622-7 DUP		**L2740826-11**						
Phosphorus (P)-Total		0.0192	0.0200		mg/L	3.8	20	23-NOV-22
WG3773622-2 LCS								
Phosphorus (P)-Total			97.9		%		80-120	23-NOV-22
WG3773622-6 LCS								
Phosphorus (P)-Total			98.6		%		80-120	23-NOV-22
WG3773622-1 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	23-NOV-22
WG3773622-5 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	23-NOV-22
WG3773622-8 MS		**L2740826-12**						
Phosphorus (P)-Total			95.3		%		70-130	23-NOV-22
P-T-L-COL-WP	**Water**							
Batch R5897129								
WG3773842-3 DUP		**L2740826-17**						
Phosphorus (P)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	24-NOV-22
WG3773842-2 LCS								
Phosphorus (P)-Total			91.9		%		80-120	24-NOV-22
WG3773842-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	24-NOV-22
WG3773842-4 MS		**L2740826-17**						
Phosphorus (P)-Total			91.9		%		70-130	24-NOV-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP	**Water**							
Batch R5895497								
WG3773354-3 DUP		**L2740826-1**						
Sulfate (SO4)		8.94	8.87		mg/L	0.8	20	19-NOV-22
WG3773354-2 LCS								
Sulfate (SO4)			102.6		%		90-110	19-NOV-22
WG3773354-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	19-NOV-22
WG3773354-4 MS		**L2740826-1**						
Sulfate (SO4)			104.0		%		75-125	19-NOV-22
SOLIDS-TOTSUS-LR-WP	**Water**							
Batch R5897076								
WG3773695-3 DUP		**L2740826-13**						
Total Suspended Solids		2.5	1.9	J	mg/L	0.5	2	23-NOV-22
WG3773695-2 LCS								
Total Suspended Solids			96.3		%		85-115	23-NOV-22
WG3773695-1 MB								
Total Suspended Solids			<1.0		mg/L		1	23-NOV-22
Batch R5897676								
WG3773879-3 DUP		**L2740826-14**						
Total Suspended Solids		<1.0	<1.0	RPD-NA	mg/L	N/A	20	24-NOV-22
WG3773879-2 LCS								
Total Suspended Solids			89.7		%		85-115	24-NOV-22
WG3773879-1 MB								
Total Suspended Solids			<1.0		mg/L		1	24-NOV-22

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Total Suspended Solids							
	12	16-NOV-22 13:37	24-NOV-22 08:00	7	8	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2740826 were received on 18-NOV-22 12:16.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC N
Page

L2740826-COFC

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: Karen.Mathers@Stantec.com
Email 2: Brad.Horne@stantec.com
Email 3: Jeremy.Jackson@stantec.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax:
Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	Q88846
Job #:	ALAMOS
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: DD	Sampler: BS, AR

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	CN-T-L, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	HG-T-CVAA-WP			SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	AQM38	16-11-22	0919	W	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
	AQM39C		0945																			
	AQM71		1004																			
	AQM72		1020																			
	AQM73		1046																			
	AQM74		1106																			
	AQF75		1154																			
	AQF38		1214																			
	AQF41		1233																			
	AQF40		1257																			
	AQF43		1318																			
	AQF45		1337																			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO
Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

dissolved metals + dissolved nutrients field filtered

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO
Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C			
5.7						

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
B. Lynch	Nov. 17 22	1145

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
[illegible]	NOV 18 2022	12:16

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized** DW COC form.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 2

Page 2 of 2

L2740826-COFC

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QC! Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Karen.Mathers@Stantec.com

Email 2: Brad.Horne@stantec.com

Email 3: Jeremy.Jackson@stantec.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax:

Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #: Q88846

Job #: ALAMOS

PO / AFE:

LSD:

ALS Lab Work Order # (ALS use only):

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Contact: Sampler: BG, AR

Analysis Request

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	CN-T-L, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	HG-T-CVAA-WP			SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	QC-01	16-11-22	-	W	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
	AQF46	17-11-22	0908																			
	AQF43		0927																			
	AQF44		0948																			
	FIELD BLANK		1024																			
	TRIP BLANK	-	-																			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?

☐ YES ☐ NO

Are samples for human consumption/ use?

☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

diss metals + diss nutrients field filtered

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
5.9							

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
B Lynch	Nov. 17/22	1045

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
	NOV 18 2022	12:16

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Alamos Gold Inc.
ATTN: KAREN MATHERS
C/O Stantec Consulting
500 - 311 Portage Avenue
Winnipeg MB R3B 2B9

Date Received: 19-DEC-22
Report Date: 30-DEC-22 14:52 (MT)
Version: FINAL

Client Phone: 204-924-5735

Certificate of Analysis

Lab Work Order #: L2743404

Project P.O. #: NOT SUBMITTED
Job Reference: ALAMOS
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2743404-1	L2743404-2	L2743404-3	L2743404-4	
Description	W	W	W	W	
Sampled Date	13-DEC-22	13-DEC-22	13-DEC-22	13-DEC-22	
Sampled Time	09:30	10:50			
Client ID	FIELD BLANK	AQF45	QC-01	TRIP BLANK	
Grouping	**Analyte**				
WATER					
Physical Tests	Hardness (as CaCO3) (mg/L)	<0.20	13.5	13.3	<0.20	
	Total Suspended Solids (mg/L)	<1.0	1.4	1.4	<1.0	
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	11.9	12.1	<1.0	
	Ammonia, Total (as N) (mg/L)	<0.010	0.015	0.024	0.149	
	Bicarbonate (HCO3) (mg/L)	<1.2	14.5	14.8	<1.2	
	Bromide (Br) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	Carbonate (CO3) (mg/L)	<0.60	<0.60	<0.60	<0.60	
	Chloride (Cl) (mg/L)	<0.10	0.28	0.27	<0.10	
	Fluoride (F) (mg/L)	<0.020	0.070	0.067	<0.020	
	Hydroxide (OH) (mg/L)	<0.34	<0.34	<0.34	<0.34	
	Nitrate and Nitrite as N (mg/L)	<0.0051	0.0409	0.0557	<0.0051	
	Nitrate (as N) (mg/L)	<0.0050	0.0409	0.0461	<0.0050	
	Nitrite (as N) (mg/L)	0.0034	<0.0010	0.0096	0.0044	
	Total Kjeldahl Nitrogen (mg/L)	<0.20	0.31	0.23	<0.20	
	Phosphorus (P)-Total (mg/L)	<0.0010	0.0130	0.0139	<0.0010	
	Sulfate (SO4) (mg/L)	<0.30	0.68	0.67	<0.30	
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Cyanide, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Cyanide, Free (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50	9.81	8.65	<0.50	
	Total Organic Carbon (mg/L)	0.51	9.52	9.98	<0.50	
Inorganic Parameters	Acidity (as CaCO3) (mg/L)	<2.0	2.0	2.1	<2.0	
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030	0.0585	0.0628	<0.0030	
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Total (mg/L)	<0.00010	0.00026	0.00024	<0.00010	
	Barium (Ba)-Total (mg/L)	<0.00010	0.00817	0.00817	<0.00010	
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Calcium (Ca)-Total (mg/L)	<0.050	4.54	4.54	<0.050	
	Cesium (Cs)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Chromium (Cr)-Total (mg/L)	<0.00010	0.00022	0.00021	<0.00010	
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Iron (Fe)-Total (mg/L)	<0.010	0.262	0.271	<0.010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2743404-1	L2743404-2	L2743404-3	L2743404-4	
	Description	W	W	W	W	
	Sampled Date	13-DEC-22	13-DEC-22	13-DEC-22	13-DEC-22	
	Sampled Time	09:30	10:50			
	Client ID	FIELD BLANK	AQF45	QC-01	TRIP BLANK	
Grouping	**Analyte**					
WATER						
Total Metals	Lead (Pb)-Total (mg/L)	<0.000050	0.000060	<0.000050	<0.000050	
	Lithium (Li)-Total (mg/L)	<0.0010	0.0014	0.0014	<0.0010	
	Magnesium (Mg)-Total (mg/L)	<0.0050	1.36	1.37	<0.0050	
	Manganese (Mn)-Total (mg/L)	<0.00010	0.0113	0.0115	<0.00010	
	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Total (mg/L)	<0.000050	0.000084	0.000091	<0.000050	
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	0.00061	<0.00050	
	Phosphorus (P)-Total (mg/L)	<0.030	0.038	0.034	<0.030	
	Potassium (K)-Total (mg/L)	<0.050	0.684	0.692	<0.050	
	Rubidium (Rb)-Total (mg/L)	<0.00020	0.00131	0.00128	<0.00020	
	Selenium (Se)-Total (mg/L)	<0.000050	0.000062	0.000060	<0.000050	
	Silicon (Si)-Total (mg/L)	<0.10	3.43	3.42	<0.10	
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Total (mg/L)	<0.050	1.63	1.66	<0.050	
	Strontium (Sr)-Total (mg/L)	<0.00020	0.0179	0.0184	<0.00020	
	Sulfur (S)-Total (mg/L)	<0.50	<0.50	<0.50	<0.50	
	Tellurium (Te)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Thorium (Th)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	<0.00030	0.00168	0.00165	<0.00030	
	Tungsten (W)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Uranium (U)-Total (mg/L)	<0.000010	0.000042	0.000041	<0.000010	
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	
	Zirconium (Zr)-Total (mg/L)	<0.00020	<0.00020	0.00024	<0.00020	
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0197	0.0193	<0.0010	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00014	0.00016	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.00042 RRV	0.00573	0.00573	<0.00010	
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Calcium (Ca)-Dissolved (mg/L)	<0.050	3.66	3.59	<0.050	
	Cesium (Cs)-Dissolved (mg/L)	<0.000010	0.000030	0.000027	<0.000010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2743404-1	L2743404-2	L2743404-3	L2743404-4	
Description	W	W	W	W	
Sampled Date	13-DEC-22	13-DEC-22	13-DEC-22	13-DEC-22	
Sampled Time	09:30	10:50			
Client ID	FIELD BLANK	AQF45	QC-01	TRIP BLANK	
Grouping / **Analyte**					
WATER					
Dissolved Metals Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Copper (Cu)-Dissolved (mg/L)	0.00041	0.00022	0.00025	<0.00020	
Iron (Fe)-Dissolved (mg/L)	<0.010	0.126	0.125	<0.010	
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
Lithium (Li)-Dissolved (mg/L)	0.0012	0.0018	0.0018	<0.0010	
Magnesium (Mg)-Dissolved (mg/L)	<0.0050	1.05	1.04	<0.0050	
Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00366	0.00362	<0.00010	
Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000082	0.000074	<0.000050	
Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Phosphorus (P)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	
Potassium (K)-Dissolved (mg/L)	<0.050	0.565	0.566	<0.050	
Rubidium (Rb)-Dissolved (mg/L)	<0.00020	0.00102	0.00098	<0.00020	
Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
Silicon (Si)-Dissolved (mg/L)	<0.050	2.61	2.59	<0.050	
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium (Na)-Dissolved (mg/L)	<0.050	1.22	1.22	<0.050	
Strontium (Sr)-Dissolved (mg/L)	<0.00010	0.0148	0.0147	<0.00010	
Sulfur (S)-Dissolved (mg/L)	<0.50	<0.50	<0.50	<0.50	
Tellurium (Te)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
Thorium (Th)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Titanium (Ti)-Dissolved (mg/L)	<0.00030	0.00034	0.00032	<0.00030	
Tungsten (W)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Uranium (U)-Dissolved (mg/L)	<0.000010	0.000023	0.000025	<0.000010	
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
Zirconium (Zr)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
Speciated Metals Chromium, Hexavalent (ug/L)	<0.50	<0.50	<0.50	<0.50	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Molybdenum (Mo)-Total	B	L2743404-1, -4
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Cesium (Cs)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Phosphorus (P)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Rubidium (Rb)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Aluminum (Al)-Total	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Total	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Copper (Cu)-Total	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Total	MS-B	L2743404-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Total	MS-B	L2743404-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-WT	Water	Acidity (as CaCO3)	APHA 2310 B - Potentiometric Titration
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BR-IC-N-WP	Water	Bromide in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP

Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

C-TOC-HTC-WP	Water	Total Organic Carbon by Combustion	APHA 5310 B-WP

Reference Information

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-L-IC-N-WP	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-L-CFA-WT	Water	Low Level Free Cyanide in water by CFA	ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-T-L-CFA-WT	Water	Low Level Total Cyanide in water by CFA	ISO 14403-2:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, however it would be less than 1% and could be as low as zero.

CN-WAD-L-CFA-WT	Water	Low level WAD Cyanide in water by CFA	APHA 4500CN I-Weak acid Dist Colorimet

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

CR-CR6-PWQO-IC-WT	Water	Chromium +6	EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-T-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-D-CCMS-WP	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020B (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

N-TOTKJ-WP	Water	Total Kjeldahl Nitrogen	APHA 4500 NorgD (modified)

Reference Information

Aqueous samples are digested in a block digester with sulfuric acid and copper sulfate as a catalyst. Total Kjeldahl Nitrogen is then analyzed using a discrete analyzer with colorimetric detection.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-L-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-L-IC-N-WP	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

P-T-L-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TOTSUS-LR-WP	Water	Total Suspended Solids	APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 Œ 105°C.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Alamos Gold Inc.
C/O Stantec Consulting 500 - 311 Portage Avenue
Winnipeg MB R3B 2B9
Contact: KAREN MATHERS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACIDITY-WT	**Water**							
Batch R5910457								
WG3776951-3 DUP		**L2743404-2**						
Acidity (as CaCO3)		2.0	<2.0	RPD-NA	mg/L	N/A	20	22-DEC-22
WG3776951-2 LCS								
Acidity (as CaCO3)			96.8		%		85-115	22-DEC-22
WG3776951-1 MB								
Acidity (as CaCO3)			<2.0		mg/L		3	22-DEC-22
ALK-TITR-WP	**Water**							
Batch R5909356								
WG3776737-9 LCS								
Alkalinity, Total (as CaCO3)			104.0		%		85-115	20-DEC-22
WG3776737-6 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-DEC-22
BR-IC-N-WP	**Water**							
Batch R5909696								
WG3776664-7 DUP		**L2743404-3**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	20-DEC-22
WG3776664-6 LCS								
Bromide (Br)			101.9		%		85-115	20-DEC-22
WG3776664-5 MB								
Bromide (Br)			<0.10		mg/L		0.1	20-DEC-22
WG3776664-8 MS		**L2743404-3**						
Bromide (Br)			105.8		%		75-125	20-DEC-22
Batch R5911256								
WG3776776-2 LCS								
Bromide (Br)			100.2		%		85-115	22-DEC-22
WG3776776-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	22-DEC-22
C-DOC-HTC-WP	**Water**							
Batch R5911138								
WG3777031-3 DUP		**L2743404-2**						
Dissolved Organic Carbon		9.81	9.39		mg/L	4.3	20	22-DEC-22
WG3777031-2 LCS								
Dissolved Organic Carbon			93.0		%		80-120	22-DEC-22
WG3777031-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-DEC-22
WG3777031-4 MS		**L2743404-3**						
Dissolved Organic Carbon			96.4		%		70-130	22-DEC-22
C-TOC-HTC-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	**Water**							
Batch R5911137								
WG3777049-6 LCS								
Total Organic Carbon			93.6		%		80-120	22-DEC-22
WG3777049-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	22-DEC-22
CL-L-IC-N-WP	**Water**							
Batch R5909696								
WG3776664-7 DUP		**L2743404-3**						
Chloride (Cl)		0.27	0.27		mg/L	0.3	20	20-DEC-22
WG3776664-6 LCS								
Chloride (Cl)			100.1		%		90-110	20-DEC-22
WG3776664-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	20-DEC-22
WG3776664-8 MS		**L2743404-3**						
Chloride (Cl)			104.8		%		75-125	20-DEC-22
Batch R5911256								
WG3776776-2 LCS								
Chloride (Cl)			100.8		%		90-110	22-DEC-22
WG3776776-1 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-DEC-22
CN-FREE-L-CFA-WT	**Water**							
Batch R5911437								
WG3777036-3 DUP		**L2743404-1**						
Cyanide, Free		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	23-DEC-22
WG3777036-2 LCS								
Cyanide, Free			92.2		%		80-120	23-DEC-22
WG3777036-1 MB								
Cyanide, Free			<0.0010		mg/L		0.001	23-DEC-22
WG3777036-4 MS		**L2743404-1**						
Cyanide, Free			87.0		%		75-125	23-DEC-22
CN-T-L-CFA-WT	**Water**							
Batch R5911437								
WG3777036-3 DUP		**L2743404-1**						
Cyanide, Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	23-DEC-22
WG3777036-2 LCS								
Cyanide, Total			91.8		%		80-120	23-DEC-22
WG3777036-1 MB								
Cyanide, Total			<0.0010		mg/L		0.001	23-DEC-22
WG3777036-4 MS		**L2743404-1**						

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-T-L-CFA-WT	**Water**							
Batch R5911437								
WG3777036-4 MS		**L2743404-1**						
Cyanide, Total			90.3		%		70-130	23-DEC-22
CN-WAD-L-CFA-WT	**Water**							
Batch R5911437								
WG3777036-3 DUP		**L2743404-1**						
Cyanide, Weak Acid Diss		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	23-DEC-22
WG3777036-2 LCS								
Cyanide, Weak Acid Diss			106.6		%		80-120	23-DEC-22
WG3777036-1 MB								
Cyanide, Weak Acid Diss			<0.0010		mg/L		0.001	23-DEC-22
WG3777036-4 MS		**L2743404-1**						
Cyanide, Weak Acid Diss			102.7		%		70-130	23-DEC-22
CR-CR6-PWQO-IC-WT	**Water**							
Batch R5910881								
WG3777011-2 LCS								
Chromium, Hexavalent			100.2		%		80-120	22-DEC-22
WG3777011-1 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	22-DEC-22
F-IC-N-WP	**Water**							
Batch R5909696								
WG3776664-7 DUP		**L2743404-3**						
Fluoride (F)		0.067	0.068		mg/L	1.5	20	20-DEC-22
WG3776664-6 LCS								
Fluoride (F)			101.9		%		90-110	20-DEC-22
WG3776664-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	20-DEC-22
WG3776664-8 MS		**L2743404-3**						
Fluoride (F)			107.4		%		75-125	20-DEC-22
Batch R5911256								
WG3776776-2 LCS								
Fluoride (F)			104.3		%		90-110	22-DEC-22
WG3776776-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-DEC-22
HG-T-CVAA-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WP	**Water**							
Batch R5911236								
WG3777060-3 DUP		**L2743404-1**						
Mercury (Hg)-Total		<0.0000050	<0.000005(	RPD-NA	mg/L	N/A	20	23-DEC-22
WG3777060-2 LCS								
Mercury (Hg)-Total			82.5		%		80-120	23-DEC-22
WG3777060-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	23-DEC-22
WG3777060-4 MS		**L2743404-2**						
Mercury (Hg)-Total			98.2		%		70-130	23-DEC-22
MET-D-CCMS-WP	**Water**							
Batch R5909630								
WG3776687-2 LCS								
Aluminum (Al)-Dissolved			102.7		%		80-120	20-DEC-22
Antimony (Sb)-Dissolved			101.7		%		80-120	20-DEC-22
Arsenic (As)-Dissolved			102.5		%		80-120	20-DEC-22
Barium (Ba)-Dissolved			100.4		%		80-120	20-DEC-22
Beryllium (Be)-Dissolved			102.9		%		80-120	20-DEC-22
Bismuth (Bi)-Dissolved			101.0		%		80-120	20-DEC-22
Boron (B)-Dissolved			102.7		%		80-120	20-DEC-22
Cadmium (Cd)-Dissolved			101.4		%		80-120	20-DEC-22
Calcium (Ca)-Dissolved			101.7		%		80-120	20-DEC-22
Cesium (Cs)-Dissolved			104.3		%		80-120	20-DEC-22
Chromium (Cr)-Dissolved			100.2		%		80-120	20-DEC-22
Cobalt (Co)-Dissolved			99.9		%		80-120	20-DEC-22
Copper (Cu)-Dissolved			99.5		%		80-120	20-DEC-22
Iron (Fe)-Dissolved			97.8		%		80-120	20-DEC-22
Lead (Pb)-Dissolved			100.9		%		80-120	20-DEC-22
Lithium (Li)-Dissolved			102.3		%		80-120	20-DEC-22
Magnesium (Mg)-Dissolved			107.6		%		80-120	20-DEC-22
Manganese (Mn)-Dissolved			101.6		%		80-120	20-DEC-22
Molybdenum (Mo)-Dissolved			103.4		%		80-120	20-DEC-22
Nickel (Ni)-Dissolved			98.5		%		80-120	20-DEC-22
Phosphorus (P)-Dissolved			104.7		%		80-120	20-DEC-22
Potassium (K)-Dissolved			101.6		%		80-120	20-DEC-22
Rubidium (Rb)-Dissolved			102.9		%		80-120	20-DEC-22
Selenium (Se)-Dissolved			98.6		%		80-120	20-DEC-22
Silicon (Si)-Dissolved			101.4		%		80-120	20-DEC-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5909630								
WG3776687-2 LCS								
Silver (Ag)-Dissolved			104.3		%		80-120	20-DEC-22
Sodium (Na)-Dissolved			101.0		%		80-120	20-DEC-22
Strontium (Sr)-Dissolved			106.8		%		80-120	20-DEC-22
Sulfur (S)-Dissolved			89.8		%		80-120	20-DEC-22
Tellurium (Te)-Dissolved			102.4		%		80-120	20-DEC-22
Thallium (Tl)-Dissolved			100.3		%		80-120	20-DEC-22
Thorium (Th)-Dissolved			89.5		%		80-120	20-DEC-22
Tin (Sn)-Dissolved			102.5		%		80-120	20-DEC-22
Titanium (Ti)-Dissolved			101.2		%		80-120	20-DEC-22
Tungsten (W)-Dissolved			100.0		%		80-120	20-DEC-22
Uranium (U)-Dissolved			97.5		%		80-120	20-DEC-22
Vanadium (V)-Dissolved			102.3		%		80-120	20-DEC-22
Zinc (Zn)-Dissolved			101.0		%		80-120	20-DEC-22
Zirconium (Zr)-Dissolved			94.6		%		80-120	20-DEC-22
WG3776687-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	20-DEC-22
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	20-DEC-22
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	20-DEC-22
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	20-DEC-22
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	20-DEC-22
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	20-DEC-22
Boron (B)-Dissolved			<0.010		mg/L		0.01	20-DEC-22
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	20-DEC-22
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	20-DEC-22
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	20-DEC-22
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	20-DEC-22
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	20-DEC-22
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	20-DEC-22
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	20-DEC-22
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	20-DEC-22
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	20-DEC-22
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	20-DEC-22
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	20-DEC-22
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	20-DEC-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5909630								
WG3776687-1 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	20-DEC-22
Phosphorus (P)-Dissolved			<0.030		mg/L		0.03	20-DEC-22
Potassium (K)-Dissolved			<0.050		mg/L		0.05	20-DEC-22
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	20-DEC-22
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	20-DEC-22
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	20-DEC-22
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	20-DEC-22
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	20-DEC-22
Strontium (Sr)-Dissolved			<0.00010		mg/L		0.0001	20-DEC-22
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	20-DEC-22
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	20-DEC-22
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	20-DEC-22
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	20-DEC-22
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	20-DEC-22
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	20-DEC-22
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	20-DEC-22
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	20-DEC-22
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	20-DEC-22
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	20-DEC-22
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	20-DEC-22
MET-T-CCMS-WP	**Water**							
Batch R5911682								
WG3776772-2 LCS								
Aluminum (Al)-Total			112.9		%		80-120	21-DEC-22
Antimony (Sb)-Total			111.6		%		80-120	21-DEC-22
Arsenic (As)-Total			108.8		%		80-120	21-DEC-22
Barium (Ba)-Total			111.1		%		80-120	21-DEC-22
Beryllium (Be)-Total			109.0		%		80-120	21-DEC-22
Bismuth (Bi)-Total			108.5		%		80-120	21-DEC-22
Boron (B)-Total			106.2		%		80-120	21-DEC-22
Cadmium (Cd)-Total			111.7		%		80-120	21-DEC-22
Calcium (Ca)-Total			104.0		%		80-120	21-DEC-22
Cesium (Cs)-Total			108.7		%		80-120	21-DEC-22
Chromium (Cr)-Total			110.2		%		80-120	21-DEC-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5911682								
WG3776772-2 LCS								
Cobalt (Co)-Total			110.4		%		80-120	21-DEC-22
Copper (Cu)-Total			111.1		%		80-120	21-DEC-22
Iron (Fe)-Total			105.9		%		80-120	21-DEC-22
Lead (Pb)-Total			108.1		%		80-120	21-DEC-22
Lithium (Li)-Total			108.2		%		80-120	21-DEC-22
Magnesium (Mg)-Total			119.7		%		80-120	21-DEC-22
Manganese (Mn)-Total			108.7		%		80-120	21-DEC-22
Molybdenum (Mo)-Total			106.4		%		80-120	21-DEC-22
Nickel (Ni)-Total			110.0		%		80-120	21-DEC-22
Potassium (K)-Total			105.7		%		80-120	21-DEC-22
Phosphorus (P)-Total			107.5		%		80-120	21-DEC-22
Rubidium (Rb)-Total			108.7		%		80-120	21-DEC-22
Selenium (Se)-Total			103.8		%		80-120	21-DEC-22
Silicon (Si)-Total			110.1		%		80-120	21-DEC-22
Silver (Ag)-Total			106.3		%		80-120	21-DEC-22
Sodium (Na)-Total			114.3		%		80-120	21-DEC-22
Strontium (Sr)-Total			107.0		%		80-120	21-DEC-22
Sulfur (S)-Total			116.5		%		80-120	21-DEC-22
Tellurium (Te)-Total			105.3		%		80-120	21-DEC-22
Thallium (Tl)-Total			108.0		%		80-120	21-DEC-22
Thorium (Th)-Total			99.9		%		80-120	21-DEC-22
Tin (Sn)-Total			108.7		%		80-120	21-DEC-22
Titanium (Ti)-Total			106.1		%		80-120	21-DEC-22
Tungsten (W)-Total			107.1		%		80-120	21-DEC-22
Uranium (U)-Total			110.1		%		80-120	21-DEC-22
Vanadium (V)-Total			110.1		%		80-120	21-DEC-22
Zinc (Zn)-Total			109.2		%		80-120	21-DEC-22
Zirconium (Zr)-Total			96.1		%		80-120	21-DEC-22
WG3776772-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	21-DEC-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	21-DEC-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	21-DEC-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	21-DEC-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	21-DEC-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5911682								
WG3776772-1 MB								
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	21-DEC-22
Boron (B)-Total			<0.010		mg/L		0.01	21-DEC-22
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	21-DEC-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	21-DEC-22
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	21-DEC-22
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	21-DEC-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	21-DEC-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	21-DEC-22
Iron (Fe)-Total			<0.010		mg/L		0.01	21-DEC-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	21-DEC-22
Lithium (Li)-Total			<0.0010		mg/L		0.001	21-DEC-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	21-DEC-22
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	21-DEC-22
Molybdenum (Mo)-Total			0.000075	B	mg/L		0.00005	21-DEC-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	21-DEC-22
Potassium (K)-Total			<0.050		mg/L		0.05	21-DEC-22
Phosphorus (P)-Total			<0.030		mg/L		0.03	21-DEC-22
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	21-DEC-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	21-DEC-22
Silicon (Si)-Total			<0.10		mg/L		0.1	21-DEC-22
Silver (Ag)-Total			<0.000010		mg/L		0.00001	21-DEC-22
Sodium (Na)-Total			<0.050		mg/L		0.05	21-DEC-22
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	21-DEC-22
Sulfur (S)-Total			<0.50		mg/L		0.5	21-DEC-22
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	21-DEC-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	21-DEC-22
Thorium (Th)-Total			<0.00010		mg/L		0.0001	21-DEC-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	21-DEC-22
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	21-DEC-22
Tungsten (W)-Total			<0.00010		mg/L		0.0001	21-DEC-22
Uranium (U)-Total			<0.000010		mg/L		0.00001	21-DEC-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	21-DEC-22
Zinc (Zn)-Total			<0.0030		mg/L		0.003	21-DEC-22
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	21-DEC-22

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
N-TOTKJ-WP	**Water**							
Batch R5911237								
WG3776761-2 LCS								
Total Kjeldahl Nitrogen			105.3		%		75-125	23-DEC-22
WG3776761-1 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	23-DEC-22
NH3-COL-WP	**Water**							
Batch R5911176								
WG3777050-15 DUP		**L2743404-2**						
Ammonia, Total (as N)		0.015	0.016		mg/L	2.6	20	22-DEC-22
WG3777050-14 LCS								
Ammonia, Total (as N)			102.7		%		85-115	22-DEC-22
WG3777050-13 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	22-DEC-22
WG3777050-16 MS		**L2743404-2**						
Ammonia, Total (as N)			96.4		%		75-125	22-DEC-22
NO2-L-IC-N-WP	**Water**							
Batch R5911256								
WG3776776-2 LCS								
Nitrite (as N)			97.4		%		90-110	22-DEC-22
WG3776776-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-DEC-22
NO3-L-IC-N-WP	**Water**							
Batch R5909696								
WG3776664-7 DUP		**L2743404-3**						
Nitrate (as N)		0.0461	0.0459		mg/L	0.4	20	20-DEC-22
WG3776664-6 LCS								
Nitrate (as N)			101.5		%		90-110	20-DEC-22
WG3776664-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	20-DEC-22
WG3776664-8 MS		**L2743404-3**						
Nitrate (as N)			106.1		%		75-125	20-DEC-22
Batch R5911256								
WG3776776-2 LCS								
Nitrate (as N)			102.3		%		90-110	22-DEC-22
WG3776776-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-DEC-22
P-T-COL-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-WP	**Water**							
Batch R5909717								
WG3776708-6 LCS								
Phosphorus (P)-Total			103.3		%		80-120	21-DEC-22
WG3776708-5 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	21-DEC-22
WG3776708-8 MS		**L2743404-2**						
Phosphorus (P)-Total			103.6		%		70-130	21-DEC-22
P-T-L-COL-WP	**Water**							
Batch R5911836								
WG3777138-2 LCS								
Phosphorus (P)-Total			93.2		%		80-120	29-DEC-22
WG3777138-1 MB								
Phosphorus (P)-Total			<0.0010		mg/L		0.001	29-DEC-22
SO4-IC-N-WP	**Water**							
Batch R5909696								
WG3776664-7 DUP		**L2743404-3**						
Sulfate (SO4)		0.67	0.66		mg/L	0.6	20	20-DEC-22
WG3776664-6 LCS								
Sulfate (SO4)			102.0		%		90-110	20-DEC-22
WG3776664-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	20-DEC-22
WG3776664-8 MS		**L2743404-3**						
Sulfate (SO4)			106.3		%		75-125	20-DEC-22
Batch R5911256								
WG3776776-2 LCS								
Sulfate (SO4)			102.7		%		90-110	22-DEC-22
WG3776776-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-DEC-22
SOLIDS-TOTSUS-LR-WP	**Water**							
Batch R5909478								
WG3776621-3 DUP		**L2743404-1**						
Total Suspended Solids		<1.0	<1.0	RPD-NA	mg/L	N/A	20	20-DEC-22
WG3776621-2 LCS								
Total Suspended Solids			100.4		%		85-115	20-DEC-22
WG3776621-1 MB								
Total Suspended Solids			<1.0		mg/L		1	20-DEC-22

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Anions and Nutrients							
Nitrate in Water by IC (Low Level)							
	1	13-DEC-22 09:30	20-DEC-22 15:00	3	7	days	EHTR
	2	13-DEC-22 10:50	22-DEC-22 17:00	3	9	days	EHTR
	3	13-DEC-22	20-DEC-22 15:00	3	7	days	EHTR
	4	13-DEC-22	20-DEC-22 15:00	3	7	days	EHTR
Nitrite in Water by IC (Low Level)							
	1	13-DEC-22 09:30	22-DEC-22 17:00	3	9	days	EHTR
	2	13-DEC-22 10:50	22-DEC-22 17:00	3	9	days	EHTR
	3	13-DEC-22	22-DEC-22 17:00	3	9	days	EHTR
	4	13-DEC-22	22-DEC-22 17:00	3	9	days	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2743404 were received on 19-DEC-22 15:26.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS www.alsglobal.com

Chain of Custody

L2743404-COFC

COC Number: 22 -

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Karen.Mathers@Stantec.com

Email 2: Brad.Horne@stantec.com

Email 3: Jeremy.Jackson@stantec.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax:

Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information

ALS Account # / Quote #: Q88846

Job #: ALAMOS

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#:

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (ALS use only):

ALS Contact: Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	CN-T-L, CN-FREE-L, CN-WAD-L	CR-CR6-PWOO-IC-WT	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	HG-T-CVAA-WP	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	FIELD BLANK	13-12-22	0930	W	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	AQF45	"	1050	"	9	"	"	"	"	"	"	"	"	"	"	"	"			
	QC-01	"	—	"	9	"	"	"	"	"	"	"	"	"	"	"	"			
	TRIP BLANK	—	—	"	9	"	"	"	"	"	"	"	"	"	"	"	"			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Diss metals field filtered + preserved, diss nutrients field filtered

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
6°C					

SHIPMENT RELEASE (client use)

Released by: B. Dyck Date: Dec. 15/22 Time: 0930

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: AH Date: DEC 19 2022 Time: 3:26

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: Date: Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **WP2302565**	Page	: 1 of 18
Client	: **Stantec Consulting Ltd.**	Laboratory	: Winnipeg - Environmental
Contact	: Karen Mathers	Account Manager	: Judy Dalmaijer
Address	: 500 - 311 Portage Ave Winnipeg MB Canada R3B 2B9	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg MB Canada R2J 3T4
Telephone	: (204)489-5900	Telephone	: +1 204 255 9720
Project	: ALAMOS	Date Samples Received	: 06-Mar-2023 13:10
PO	: ----	Date Analysis Commenced	: 06-Mar-2023
C-O-C number	: ----	Issue Date	: 31-Mar-2023 13:44
Sampler	: ----		
Site	: ----		
Quote number	: Budgetary Quote		
No. of samples received	: 18		
No. of samples analysed	: 18		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Christine Mason	Department Manager - Chemistry	Inorganics, Winnipeg, Manitoba
Christine Mason	Department Manager - Chemistry	Metals, Winnipeg, Manitoba
Greg Pokocky	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario
Jayden Piattelli	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Lee McTavish		Inorganics, Winnipeg, Manitoba
Matthew Bouch		Metals, Winnipeg, Manitoba
Oleksandr Busel		Inorganics, Winnipeg, Manitoba
Parnian Sane	Analyst	Metals, Burnaby, British Columbia
Zandrea Grabinski		Inorganics, Winnipeg, Manitoba

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µg/L	micrograms per litre
mg/L	milligrams per litre
ng/L	nanograms per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM28	AQM29C	AQM71	AQM72	AQM73
					Client sampling date / time	28-Feb-2023 09:49	28-Feb-2023 10:23	28-Feb-2023 11:05	28-Feb-2023 11:39	28-Feb-2023 12:15
						WP2302565-001	WP2302565-002	WP2302565-003	WP2302565-004	WP2302565-005
						Result	Result	Result	Result	Result
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	2.6	3.3	28.2	5.4
Alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L		12.8	9.2	150	25.4	21.3
Alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		12.8	9.2	150	25.4	21.3
Hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L		21.7	13.2	142	37.2	33.8
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		<1.0	<1.0	3.3	5.8	<1.0
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		0.040	0.021	0.339	0.052	0.011
Bromide	24959-67-9	E235.Br	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Chloride	16887-00-6	E235.Cl	0.50	mg/L		1.09	<0.50	3.30	2.06	0.97
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.060	0.061	0.046	0.090	0.049
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.43	0.30	1.30	2.06	1.31
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.138	0.114	0.064	0.103	0.037
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus, total	7723-14-0	E372	0.020	mg/L		0.023	<0.020	0.051	0.086	0.088
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		8.48	1.50	0.61	4.97	1.60
Cyanides										
Cyanide, free	----	E339	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	0.0056	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		12.6	10.0	24.0	64.6	51.5
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		12.8	9.95	23.3	64.4	52.1
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.119	0.0310	0.0862	0.316	0.167
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	0.00028	0.00039	<0.00010
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00030	0.00020	0.00057	0.00091	0.00080
Barium, total	7440-39-3	E420	0.00010	mg/L		0.0100	0.00760	0.0264	0.0238	0.00919

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM28	AQM29C	AQM71	AQM72	AQM73
					Client sampling date / time	28-Feb-2023 09:49	28-Feb-2023 10:23	28-Feb-2023 11:05	28-Feb-2023 11:39	28-Feb-2023 12:15
						WP2302565-001	WP2302565-002	WP2302565-003	WP2302565-004	WP2302565-005
						Result	Result	Result	Result	Result
Total Metals										
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	0.000026	<0.000020
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	0.011	<0.010
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000186	0.0000067	0.0000231	0.0000446	0.0000196
Calcium, total	7440-70-2	E420	0.050	mg/L		6.44	3.80	45.0	10.4	9.72
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	0.000020	0.000027
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	0.00055	0.00143	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00048	<0.00010	0.00199	0.00038	0.00054
Copper, total	7440-50-8	E420	0.00050	mg/L		0.00357	0.00068	0.00112	0.00229	<0.00050
Iron, total	7439-89-6	E420	0.010	mg/L		1.35	0.302	3.43	5.82	1.60
Lead, total	7439-92-1	E420	0.000050	mg/L		0.000075	<0.000050	0.000105	0.000343	0.000092
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0017	0.0013	0.0020	0.0044	0.0026
Magnesium, total	7439-95-4	E420	0.0050	mg/L		1.36	0.898	7.30	2.73	2.31
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.0310	0.00944	1.77	0.100	0.190
Mercury, total	7439-97-6	E508-L	0.50	ng/L		1.34	0.65	4.38	4.94	6.60
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000072	<0.000050	0.000280	0.000126	0.000069
Nickel, total	7440-02-0	E420	0.00050	mg/L		0.0366	0.00350	0.00138	0.00188	0.00144
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	0.052	0.078	0.087
Potassium, total	7440-09-7	E420	0.050	mg/L		0.798	0.744	2.08	5.51	2.32
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00106	0.00118	0.00260	0.00869	0.00352
Selenium, total	7782-49-2	E420	0.000050	mg/L		0.000057	<0.000050	0.000082	0.000223	0.000097
Silicon, total	7440-21-3	E420	0.10	mg/L		4.04	3.76	13.4	13.8	10.1
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		1.69	1.38	4.33	4.10	2.02
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0214	0.0155	0.0714	0.0327	0.0214
Sulfur, total	7704-34-9	E420	0.50	mg/L		2.09	2.09	1.38	34.5	<0.50
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	0.000019	<0.000010
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00016	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00051	0.00050	0.0125	<0.00010

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM28	AQM29C	AQM71	AQM72	AQM73
					Client sampling date / time	28-Feb-2023 09:49	28-Feb-2023 10:23	28-Feb-2023 11:05	28-Feb-2023 11:39	28-Feb-2023 12:15
						WP2302565-001	WP2302565-002	WP2302565-003	WP2302565-004	WP2302565-005
						Result	Result	Result	Result	Result
Total Metals										
Titanium, total	7440-32-6	E420	0.00030	mg/L		0.00185	0.00061	0.00301	0.00751	0.00293
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.000024	0.000024	0.000108	0.000074	<0.000010
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	0.00059	0.00112	<0.00050
Zinc, total	7440-66-6	E420	0.0030	mg/L		0.0165	0.0115	0.0092	0.0315	0.0070
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	0.00040	0.00078	0.00029
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0807	0.0142	0.0600	0.228	0.148
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00017	<0.00010
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00022	0.00016	0.00054	0.00078	0.00079
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00949	0.00714	0.0238	0.0219	0.00993
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	0.000021	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	0.010	<0.010
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000124	<0.0000050	0.0000122	0.0000321	0.0000218
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		6.55	3.06	39.7	10.1	9.69
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	0.000011	0.000024
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	0.00105	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00022	<0.00010	0.00192	0.00035	0.00054
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00224	0.00051	0.00064	0.00206	0.00061
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.954	0.186	3.23	4.26	1.45
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000055	<0.000050	0.000067	0.000234	0.000074
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0013	0.0012	0.0016	0.0038	0.0023
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		1.48	0.830	7.05	2.78	2.36
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0234	0.00700	1.74	0.0890	0.178
Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L		1.46	<0.50	2.58	4.86	6.13
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000068	<0.000050	0.000250	0.000104	0.000060
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.0322	0.00329	0.00142	0.00172	0.00156
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	0.068
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.806	0.656	1.90	5.24	2.21

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM28	AQM29C	AQM71	AQM72	AQM73
					Client sampling date / time	28-Feb-2023 09:49	28-Feb-2023 10:23	28-Feb-2023 11:05	28-Feb-2023 11:39	28-Feb-2023 12:15
						WP2302565-001	WP2302565-002	WP2302565-003	WP2302565-004	WP2302565-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00109	0.00112	0.00252	0.00820	0.00337
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000090	<0.000050	0.000097	0.000185	0.000120
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.90	3.31	12.4	12.4	9.80
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.83	1.28	4.09	4.04	2.05
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0229	0.0141	0.0691	0.0311	0.0218
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		2.38	0.99	1.53	2.74	<0.50
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	0.000014	<0.000010
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00014	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	0.00040	0.00054	<0.00010
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00085	<0.00030	0.00214	0.00532	0.00247
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000023	0.000020	0.000098	0.000064	<0.000010
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	0.00071	<0.00050
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0166	0.0025	0.0093	0.0120	0.0071
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	0.00045	0.00078	0.00038
Dissolved MeHg filtration location	----	EP537	-	-		Field	Field	Field	Field	Field
Dissolved mercury filtration location	----	EP509-L	-	-		Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		<0.00050	<0.00050	<0.00050	0.00056	0.00156 RRV
Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	µg/L		0.000074	0.000043	0.00176	0.000309	0.000261
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	µg/L		<0.000020	0.000052	0.000365	0.000233	0.000178

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF7S	AQF7D	AQF38	AQF46	AQF42
					Client sampling date / time	28-Feb-2023 01:03	28-Feb-2023 14:41	28-Feb-2023 15:05	28-Feb-2023 15:33	28-Feb-2023 16:06
						WP2302565-006	WP2302565-007	WP2302565-008	WP2302565-009	WP2302565-010
						Result	Result	Result	Result	Result
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	5.7	<2.0
Alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L		17.1	16.3	24.6	32.7	6.0
Alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		17.1	16.3	24.6	32.7	6.0
Hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L		20.1	19.0	35.7	44.3	13.2
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		<1.0	<1.0	<1.0	3.1	2.5
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		<0.010	<0.010	0.014	0.237	0.033
Bromide	24959-67-9	E235.Br	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	0.86	1.22	0.56
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.049	0.044	0.105	0.051	0.071
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.29	0.29	0.45	0.82	0.39
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.078	0.114	0.156	0.105	0.121
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus, total	7723-14-0	E372	0.020	mg/L		<0.020	<0.020	<0.020	0.023	0.025
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.27	0.88	9.02	11.2	9.60
Cyanides										
Cyanide, free	----	E339	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		10.1	9.68	14.8	13.4	9.50
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		12.0	9.02	13.5	14.9	10.1
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0207	0.0224	0.0214	0.0295	0.0675
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00043	0.00029
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00027	0.00022	0.00026	0.00044	0.00023
Barium, total	7440-39-3	E420	0.00010	mg/L		0.00871	0.00980	0.0160	0.0142	0.00832
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF7S	AQF7D	AQF38	AQF46	AQF42
					Client sampling date / time	28-Feb-2023 01:03	28-Feb-2023 14:41	28-Feb-2023 15:05	28-Feb-2023 15:33	28-Feb-2023 16:06
						WP2302565-006	WP2302565-007	WP2302565-008	WP2302565-009	WP2302565-010
						Result	Result	Result	Result	Result
Total Metals										
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	0.0000096	0.0000107
Calcium, total	7440-70-2	E420	0.050	mg/L		4.91	4.70	9.95	13.3	3.62
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	0.00064	0.00099
Iron, total	7439-89-6	E420	0.010	mg/L		0.054	0.070	0.081	0.583	0.353
Lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	0.000065	0.000082
Lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	0.0011	0.0011	0.0012
Magnesium, total	7439-95-4	E420	0.0050	mg/L		1.91	1.76	2.63	2.70	1.00
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.00241	0.0354	0.0142	0.109	0.0206
Mercury, total	7439-97-6	E508-L	0.50	ng/L		0.76	0.71	0.53	0.97	1.01
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000076	0.000052	0.00203	0.000067	0.000070
Nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7	E420	0.050	mg/L		0.630	0.559	0.776	1.06	0.716
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00112	0.00103	0.00120	0.00128	0.00117
Selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	0.000051	0.000068	<0.000050	<0.000050
Silicon, total	7440-21-3	E420	0.10	mg/L		1.15	1.27	2.12	1.78	3.44
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		1.28	1.14	1.64	1.61	1.40
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0152	0.0151	0.0263	0.0227	0.0151
Sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	0.58	2.47	8.56
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00036	0.00019	0.00071	0.00209
Titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	0.00069	0.00229

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF7S	AQF7D	AQF38	AQF46	AQF42
					Client sampling date / time	28-Feb-2023 01:03	28-Feb-2023 14:41	28-Feb-2023 15:05	28-Feb-2023 15:33	28-Feb-2023 16:06
						WP2302565-006	WP2302565-007	WP2302565-008	WP2302565-009	WP2302565-010
						Result	Result	Result	Result	Result
Total Metals										
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		<0.000010	<0.000010	0.000011	<0.000010	0.000044
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	0.0056	0.0448	0.0256
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0190	0.0191	0.0178	0.0157	0.0241
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00023	0.00022	0.00022	0.00034	0.00019
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00860	0.0221	0.0157	0.0269	0.0204
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	0.0000054	<0.0000050
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		4.70	5.03	9.81	12.4	3.36
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00022	0.00124	<0.00020	0.00194	0.00197
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.044	0.047	0.060	0.448	0.200
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	0.000073	0.000077
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	0.0011	0.0010
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		1.70	1.59	2.67	2.82	1.01
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00190	0.0232	0.00837	0.0594	0.0143
Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L		1.04	0.83	0.60	0.65	<0.50
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000072	0.000065	0.00196	0.000060	0.000074
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.576	0.524	0.737	1.02	0.752
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00112	0.00093	0.00110	0.00122	0.00112

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF7S	AQF7D	AQF38	AQF46	AQF42
					Client sampling date / time	28-Feb-2023 01:03	28-Feb-2023 14:41	28-Feb-2023 15:05	28-Feb-2023 15:33	28-Feb-2023 16:06
						WP2302565-006	WP2302565-007	WP2302565-008	WP2302565-009	WP2302565-010
						Result	Result	Result	Result	Result
Dissolved Metals										
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000052	<0.000050	0.000063	0.000067	<0.000050
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		1.08	1.16	2.07	1.70	3.26
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.23	1.15	1.65	1.59	1.40
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0144	0.0148	0.0258	0.0236	0.0151
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1.26	0.57	0.55	<0.50	0.55
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00016	0.00076	<0.00010	0.00016	0.00018
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	0.00041
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		<0.000010	<0.000010	0.000011	<0.000010	0.000031
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0025	0.0033	0.0025	0.0048	0.0049
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved MeHg filtration location	----	EP537	-	-		Field	Field	Field	Field	Field
Dissolved mercury filtration location	----	EP509-L	-	-		Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	µg/L		0.000063	0.000190	0.000021	0.000259	0.000029
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	µg/L		0.000094	0.000044	0.000042	0.000059	0.000040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	QC-01	AQF45	AQF44	AQF43	AQF40
					Client sampling date / time	28-Feb-2023	01-Mar-2023 09:16	01-Mar-2023 09:45	01-Mar-2023 10:15	01-Mar-2023 10:53
						WP2302565-011	WP2302565-012	WP2302565-013	WP2302565-014	WP2302565-015
						Result	Result	Result	Result	Result
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L		20.1	7.7	12.9	9.3	3.6
Alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		20.1	7.7	12.9	9.3	3.6
Hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L		19.6	15.6	13.5	12.6	12.9
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		<1.0	1.1	<1.0	<1.0	<1.0
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		0.017	0.012	0.014	<0.010	0.013
Bromide	24959-67-9	E235.Br	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	3.82	3.22	<0.50	0.69
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.050	0.074	0.072	0.074	0.074
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.35	0.28	0.29	0.27	0.31
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.075	0.101	0.112	0.120	0.102
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus, total	7723-14-0	E372	0.020	mg/L		<0.020	<0.020	<0.020	<0.020	<0.020
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.00	6.54	8.26	2.15	8.08
Cyanides										
Cyanide, free	----	E339	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		9.65	8.95	8.95	9.09	9.63
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		10.1	10.7	9.22	8.78	9.66
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0208	0.0499	0.0364	0.0359	0.0357
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	0.00014
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00026	0.00019	0.00021	0.00018	0.00018
Barium, total	7440-39-3	E420	0.00010	mg/L		0.00888	0.00704	0.00694	0.00690	0.00702
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	QC-01	AQF45	AQF44	AQF43	AQF40
					Client sampling date / time	28-Feb-2023	01-Mar-2023 09:16	01-Mar-2023 09:45	01-Mar-2023 10:15	01-Mar-2023 10:53
						WP2302565-011	WP2302565-012	WP2302565-013	WP2302565-014	WP2302565-015
						Result	Result	Result	Result	Result
Total Metals										
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium, total	7440-70-2	E420	0.050	mg/L		4.73	4.41	3.72	3.41	3.52
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, total	7439-89-6	E420	0.010	mg/L		0.053	0.296	0.295	0.291	0.282
Lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	0.0012	0.0013	0.0012	0.0013
Magnesium, total	7439-95-4	E420	0.0050	mg/L		1.88	1.12	1.03	0.983	0.998
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.00232	0.0108	0.0106	0.0108	0.0107
Mercury, total	7439-97-6	E508-L	0.50	ng/L		0.74	0.99	0.76	0.81	0.85
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000071	0.000066	0.000056	<0.000050	0.000051
Nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7	E420	0.050	mg/L		0.608	0.617	0.656	0.598	0.637
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00114	0.00110	0.00114	0.00113	0.00110
Selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon, total	7440-21-3	E420	0.10	mg/L		1.17	3.32	3.34	3.34	3.38
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		1.28	1.38	1.40	1.33	1.36
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0148	0.0161	0.0156	0.0149	0.0153
Sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	0.82	4.43	<0.50	1.95
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00011	0.00116	<0.00010	0.00055
Titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	0.00124	0.00106	0.00088	0.00086

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	QC-01	AQF45	AQF44	AQF43	AQF40
					Client sampling date / time	28-Feb-2023	01-Mar-2023 09:16	01-Mar-2023 09:45	01-Mar-2023 10:15	01-Mar-2023 10:53
						WP2302565-011	WP2302565-012	WP2302565-013	WP2302565-014	WP2302565-015
						Result	Result	Result	Result	Result
Total Metals										
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.000010	0.000028	0.000028	0.000025	0.000024
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	0.0043	0.0083	0.0034	0.0108
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	0.00032
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0183	0.0212	0.0220	0.0205	0.0209
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00022	0.00016	0.00017	0.00015	0.00017
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00870	0.00662	0.0169	0.00660	0.0203
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		4.79	3.73	3.37	3.24	3.20
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	0.00043	0.00189	0.00025	0.00171
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.041	0.173	0.180	0.181	0.175
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	0.000072
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		1.73	1.07	1.00	0.951	0.951
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00191	0.00647	0.00688	0.00678	0.00708
Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L		0.81	0.82	0.89	0.98	0.94
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000068	0.000059	0.000063	<0.000050	0.000055
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.595	0.580	0.619	0.562	0.600
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00106	0.00100	0.00114	0.00100	0.00108

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	QC-01	AQF45	AQF44	AQF43	AQF40
					Client sampling date / time	28-Feb-2023	01-Mar-2023 09:16	01-Mar-2023 09:45	01-Mar-2023 10:15	01-Mar-2023 10:53
						WP2302565-011	WP2302565-012	WP2302565-013	WP2302565-014	WP2302565-015
						Result	Result	Result	Result	Result
Dissolved Metals										
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000051	<0.000050	<0.000050	<0.000050	<0.000050
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		1.09	3.06	3.17	3.11	3.08
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.26	1.36	1.33	1.29	1.33
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0146	0.0152	0.0149	0.0146	0.0142
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.59	1.90	0.50	<0.50	0.61
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	0.00018	0.00011	<0.00010	0.00015
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000010	0.000024	0.000022	0.000022	0.000022
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0023	0.0024	0.0025	<0.0010	0.0031
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved MeHg filtration location	----	EP537	-	-		Field	Field	Field	Field	Field
Dissolved mercury filtration location	----	EP509-L	-	-		Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	µg/L		0.000038	0.000039	0.000038	0.000035	0.000035
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	µg/L		0.000040	0.000051	0.000029	0.000066	0.000022

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	AQF41	FIELD BLANK	TRIP BLANK	----	----
				Client sampling date / time	01-Mar-2023 11:32	01-Mar-2023 15:15	01-Mar-2023	----	----
Analyte	CAS Number	Method	LOR	Unit	WP2302565-016	WP2302565-017	WP2302565-018	--------	--------
					Result	Result	Result	----	----
Physical Tests									
Acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	----	----
Alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L	10.9	<2.0	<2.0	----	----
Alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	<2.0	----	----
Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	10.9	<2.0	<2.0	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L	12.6	<0.50	<0.50	----	----
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L	5.3	<1.0	<1.0	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L	0.038	<0.010	0.042	----	----
Bromide	24959-67-9	E235.Br	0.10	mg/L	<0.10	<0.10	<0.10	----	----
Chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	<0.50	----	----
Fluoride	16984-48-8	E235.F	0.020	mg/L	0.076	<0.020	<0.020	----	----
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	0.35	<0.15	<0.15	----	----
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	0.122	<0.020	<0.020	----	----
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	<0.010	----	----
Phosphorus, total	7723-14-0	E372	0.020	mg/L	0.027	<0.020	<0.020	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.04	<0.30	<0.30	----	----
Cyanides									
Cyanide, free	----	E339	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----
Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----
Cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	<0.0050	----	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	9.21	<0.50	0.76	----	----
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	10.5	<0.50	<0.50	----	----
Total Metals									
Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.105	<0.0030	<0.0030	----	----
Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00012	<0.00010	<0.00010	----	----
Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00022	<0.00010	<0.00010	----	----
Barium, total	7440-39-3	E420	0.00010	mg/L	0.00882	<0.00010	<0.00010	----	----
Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	<0.000020	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF41	FIELD BLANK	TRIP BLANK	----	----
					Client sampling date / time	01-Mar-2023 11:32	01-Mar-2023 15:15	01-Mar-2023	----	----
						WP2302565-016	WP2302565-017	WP2302565-018	--------	--------
						Result	Result	Result	----	----
Total Metals										
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	----	----
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000111	<0.0000050	<0.0000050	----	----
Calcium, total	7440-70-2	E420	0.050	mg/L		3.37	<0.050	<0.050	----	----
Cesium, total	7440-46-2	E420	0.000010	mg/L		0.000011	<0.000010	<0.000010	----	----
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00010	<0.00010	<0.00010	----	----
Copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Iron, total	7439-89-6	E420	0.010	mg/L		0.586	<0.010	<0.010	----	----
Lead, total	7439-92-1	E420	0.000050	mg/L		0.000094	<0.000050	<0.000050	----	----
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0013	<0.0010	<0.0010	----	----
Magnesium, total	7439-95-4	E420	0.0050	mg/L		1.02	<0.0050	<0.0050	----	----
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.0670	<0.00010	<0.00010	----	----
Mercury, total	7439-97-6	E508-L	0.50	ng/L		1.16	<0.50	<0.50	----	----
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000058	<0.000050	<0.000050	----	----
Nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	----	----
Potassium, total	7440-09-7	E420	0.050	mg/L		0.708	<0.050	<0.050	----	----
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00131	<0.00020	<0.00020	----	----
Selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Silicon, total	7440-21-3	E420	0.10	mg/L		3.44	<0.10	<0.10	----	----
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Sodium, total	7440-23-5	E420	0.050	mg/L		1.34	<0.050	<0.050	----	----
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0154	<0.00020	<0.00020	----	----
Sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	<0.50	----	----
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Titanium, total	7440-32-6	E420	0.00030	mg/L		0.00459	<0.00030	<0.00030	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQF41	FIELD BLANK	TRIP BLANK	----	----
					Client sampling date / time	01-Mar-2023 11:32	01-Mar-2023 15:15	01-Mar-2023	----	----
Analyte	CAS Number	Method	LOR	Unit		WP2302565-016	WP2302565-017	WP2302565-018	--------	--------
						Result	Result	Result	----	----
Total Metals										
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.000037	<0.000010	<0.000010	----	----
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Zinc, total	7440-66-6	E420	0.0030	mg/L		0.0052	<0.0030	<0.0030	----	----
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0229	<0.0010	<0.0010	----	----
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00016	<0.00010	<0.00010	----	----
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00720	0.00359	<0.00010	----	----
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	----	----
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		3.36	<0.050	<0.050	----	----
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00030	0.00096	<0.00020	----	----
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.194	<0.010	<0.010	----	----
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0010	<0.0010	<0.0010	----	----
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		0.976	<0.0050	<0.0050	----	----
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00968	<0.00010	<0.00010	----	----
Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L		1.13	<0.50	<0.50	----	----
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000053	<0.000050	<0.000050	----	----
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	----	----
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.617	<0.050	<0.050	----	----
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00107	<0.00020	<0.00020	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQF41	FIELD BLANK	TRIP BLANK	----	----
					Client sampling date / time	01-Mar-2023 11:32	01-Mar-2023 15:15	01-Mar-2023	----	----
Analyte	CAS Number	Method	LOR	Unit		WP2302565-016	WP2302565-017	WP2302565-018	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.13	<0.050	<0.050	----	----
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.34	<0.050	<0.050	----	----
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0150	<0.00020	<0.00020	----	----
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	<0.50	----	----
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00036	<0.00030	<0.00030	----	----
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000022	<0.000010	<0.000010	----	----
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0014	0.0013	<0.0010	----	----
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	----	----
Dissolved MeHg filtration location	----	EP537	-	-		Field	Field	Field	----	----
Dissolved mercury filtration location	----	EP509-L	-	-		Field	Field	Field	----	----
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Laboratory	----	----
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	µg/L		0.000064	<0.000020	<0.000020	----	----
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	µg/L		0.000036	0.000040 RRV	<0.000020	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WP2302565**	Page	: 1 of 59
Client	: **Stantec Consulting Ltd.**	Laboratory	: Winnipeg - Environmental
Contact	: Karen Mathers	Account Manager	: Judy Dalmaijer
Address	: 500 - 311 Portage Ave Winnipeg MB Canada R3B 2B9	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	: (204)489-5900	Telephone	: +1 204 255 9720
Project	: ALAMOS	Date Samples Received	: 06-Mar-2023 13:10
PO	: ----	Issue Date	: 31-Mar-2023 13:46
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: Budgetary Quote		
No. of samples received	: 18		
No. of samples analysed	: 18		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Matrix Spike (MS) Recoveries								
Dissolved Metals	Anonymous	Anonymous	Selenium, dissolved	7782-49-2	E421	132 % MES	70.0-130%	Recovery greater than upper data quality objective

Result Qualifiers

Qualifier	*Description*
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF40	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF41	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF43	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF44	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF45	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) FIELD BLANK	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) TRIP BLANK	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF38	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF42	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF46	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF7D	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM28	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM29C	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM71	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM72	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM73	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) QC-01	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF7S	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF40	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF41	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF43	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF44	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF45	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE FIELD BLANK	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE TRIP BLANK	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF38	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF42	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF46	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF7D	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF7S	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM28	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM29C	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM71	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM72	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM73	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE QC-01	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF40	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF41	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF43	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF44	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF45	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE FIELD BLANK	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TRIP BLANK	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF38	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF42	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF46	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF7D	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF7S	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQM28	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQM29C	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQM71	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQM72	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE AQM73	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE QC-01	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF40	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF41	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF43	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF44	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF45	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE FIELD BLANK	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TRIP BLANK	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF38	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF42	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF46	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF7D	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF7S	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM28	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM29C	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM71	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM72	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM73	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE QC-01	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF40	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF41	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF43	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF44	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF45	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE FIELD BLANK	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE TRIP BLANK	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF38	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF42	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF46	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF7D	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF7S	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM28	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM29C	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM71	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM72	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM73	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE QC-01	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF40	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF41	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF43	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF44	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF45	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE FIELD BLANK	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE TRIP BLANK	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF38	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF42	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF46	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF7D	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF7S	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM28	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM29C	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM71	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM72	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM73	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	✖ EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE QC-01	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	✖ EHTR-FM
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF40	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF41	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF43	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF44	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF45	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE FIELD BLANK	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE TRIP BLANK	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF38	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF42	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF46	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF7D	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF7S	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM28	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM29C	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM71	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM72	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
AQM73	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
QC-01	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF40	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF41	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF43	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF44	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF45	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
FIELD BLANK	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
TRIP BLANK	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF38	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF42	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF46	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF7D	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF7S	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM28	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM29C	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM71	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM72	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM73	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) QC-01	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF40	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF41	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF43	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF44	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF45	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) FIELD BLANK	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) TRIP BLANK	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF38	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF42	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF46	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF7D	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF7S	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQM28	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQM29C	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQM71	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQM72	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQM73	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) QC-01	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF38	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF42	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF46	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF7D	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF7S	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM28	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM29C	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM71	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM72	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM73	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) QC-01	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF40	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF41	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF43	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF44	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF45	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
FIELD BLANK	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TRIP BLANK	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF38	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF42	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF46	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF7D	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF7S	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM28	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM29C	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM71	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM72	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM73	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) QC-01	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF40	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF41	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF43	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF44	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF45	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
FIELD BLANK	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TRIP BLANK	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF38	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF42	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF46	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF7D	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF7S	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM28	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM29C	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM71	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM72	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM73	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) QC-01	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF40	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF41	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF43	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF44	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF45	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
FIELD BLANK	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TRIP BLANK	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF38	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF42	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF46	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF7D	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQM28	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQM29C	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQM71	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) AQM72	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) AQM73	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) QC-01	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) AQF7S	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	11 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) AQF40	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) AQF41	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) AQF43	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) AQF44	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) AQF45	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) FIELD BLANK	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) TRIP BLANK	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF40	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF41	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF43	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF44	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF45	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) FIELD BLANK	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) TRIP BLANK	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF38	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF42	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF46	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF7D	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF7S	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM28	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM29C	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM71	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM72	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM73	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) QC-01	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF38	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF40	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF41	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF43	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF44	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF45	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF7D	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF7S	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM28	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM29C	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM71	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM72	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM73	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) FIELD BLANK	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TRIP BLANK	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF42	E358-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF46	E358-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) QC-01	E358-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) FIELD BLANK	E355-L	01-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	28 days	12 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TRIP BLANK	E355-L	01-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	28 days	12 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF40	E355-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF41	E355-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF43	E355-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF44	E355-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF45	E355-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF38	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF42	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF46	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF7D	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF7S	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM28	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM29C	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM71	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM72	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM73	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) QC-01	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF40	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF41	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF43	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF44	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF45	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE FIELD BLANK	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE TRIP BLANK	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE AQF38	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF42	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF46	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF7D	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM28	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM29C	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM71	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM72	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM73	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE										
QC-01	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE										
AQF7S	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	15 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
AQF40	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
AQF41	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
AQF43	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
AQF44	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
AQF45	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
FIELD BLANK	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
TRIP BLANK	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE AQF38	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF42	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF46	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF7D	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF7S	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM28	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM29C	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM71	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM72	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE AQM73	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE QC-01	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF40	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF41	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF43	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF44	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF45	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] FIELD BLANK	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] TRIP BLANK	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF38	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF42	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF46	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF7D	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF7S	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM28	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM29C	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM71	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM72	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB]										
AQM73	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB]										
QC-01	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQF38	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQF7D	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQF7S	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQM28	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQM29C	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQM71	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQM72	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) AQM73	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) AQF40	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) AQF41	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) AQF43	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) AQF44	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) AQF45	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) FIELD BLANK	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) TRIP BLANK	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) AQF42	E537	28-Feb-2023	17-Mar-2023	180 days	17 days	✓	21-Mar-2023	180 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) AQF46	E537	28-Feb-2023	17-Mar-2023	180 days	17 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) QC-01	E537	28-Feb-2023	17-Mar-2023	180 days	17 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF40	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF41	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF43	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF44	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF45	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) FIELD BLANK	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) TRIP BLANK	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF38	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF42	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF46	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF7D	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF7S	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM28	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM29C	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM71	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM72	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM73	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) QC-01	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF40	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF41	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF43	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF44	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF45	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) FIELD BLANK	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) TRIP BLANK	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF38	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF42	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF46	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF7D	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQM28	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQM29C	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQM71	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQM72	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQM73	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) QC-01	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF7S	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	12 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF38	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF42	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF46	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF7D	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF7S	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQM28	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQM29C	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQM71	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQM72	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQM73	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) QC-01	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF40	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF41	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF43	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF44	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF45	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
FIELD BLANK	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
TRIP BLANK	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
AQF40	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
AQF41	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
AQF43	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
AQF44	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
AQF45	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
AQM28	E420	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
FIELD BLANK	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) TRIP BLANK	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF38	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF42	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF46	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF7D	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF7S	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM29C	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM71	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM72	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM73	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) QC-01	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	856311	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	853851	1	20	5.0	5.0	✓
Ammonia in Water by Colour	E303	853867	1	18	5.5	5.0	✓
Bromide in Water by IC	E235.Br	854724	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	854722	2	26	7.6	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	859431	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	854521	1	20	5.0	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	862432	2	33	6.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	854523	2	32	6.2	5.0	✓
Fluoride in Water by IC	E235.F	854723	2	29	6.9	5.0	✓
Free Cyanide	E339	859043	2	30	6.6	5.0	✓
Nitrate in Water by IC	E235.NO3	854719	2	37	5.4	5.0	✓
Nitrite in Water by IC	E235.NO2	854720	2	37	5.4	5.0	✓
Sulfate in Water by IC	E235.SO4	854721	2	28	7.1	5.0	✓
Total Cyanide	E333	859041	2	33	6.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	857259	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	854740	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	859213	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	854517	2	40	5.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	858920	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	855745	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	854707	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	855079	1	19	5.2	5.0	✓
WAD Cyanide	E336	859044	2	22	9.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	856311	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	853851	1	20	5.0	5.0	✓
Ammonia in Water by Colour	E303	853867	1	18	5.5	5.0	✓
Bromide in Water by IC	E235.Br	854724	2	20	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	854722	2	26	7.6	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	859431	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	854521	1	20	5.0	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	862432	3	33	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	854523	2	32	6.2	5.0	✓
Fluoride in Water by IC	E235.F	854723	2	29	6.9	5.0	✓
Free Cyanide	E339	859043	2	30	6.6	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Nitrate in Water by IC	E235.NO3	854719	2	37	5.4	5.0	✓
Nitrite in Water by IC	E235.NO2	854720	2	37	5.4	5.0	✓
Sulfate in Water by IC	E235.SO4	854721	2	28	7.1	5.0	✓
Total Cyanide	E333	859041	2	33	6.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	857259	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	854740	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	859213	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	854517	2	40	5.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	858920	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	855745	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	854707	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	855079	1	19	5.2	5.0	✓
WAD Cyanide	E336	859044	2	22	9.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	856311	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	853851	1	20	5.0	5.0	✓
Ammonia in Water by Colour	E303	853867	1	18	5.5	5.0	✓
Bromide in Water by IC	E235.Br	854724	2	20	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	854722	2	26	7.6	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	859431	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	854521	1	20	5.0	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	862432	3	33	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	854523	2	32	6.2	5.0	✓
Fluoride in Water by IC	E235.F	854723	2	29	6.9	5.0	✓
Free Cyanide	E339	859043	2	30	6.6	5.0	✓
Nitrate in Water by IC	E235.NO3	854719	2	37	5.4	5.0	✓
Nitrite in Water by IC	E235.NO2	854720	2	37	5.4	5.0	✓
Sulfate in Water by IC	E235.SO4	854721	2	28	7.1	5.0	✓
Total Cyanide	E333	859041	2	33	6.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	857259	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	854740	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	859213	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	854517	2	40	5.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	858920	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	855745	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	854707	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	855079	1	19	5.2	5.0	✓
WAD Cyanide	E336	859044	2	22	9.0	5.0	✓
Matrix Spikes (MS)							

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Ammonia in Water by Colour	E303	853867	1	18	5.5	5.0	✓
Bromide in Water by IC	E235.Br	854724	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	854722	2	26	7.6	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	859431	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	854521	1	20	5.0	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	862432	2	33	6.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	854523	2	32	6.2	5.0	✓
Fluoride in Water by IC	E235.F	854723	2	29	6.9	5.0	✓
Free Cyanide	E339	859043	2	30	6.6	5.0	✓
Nitrate in Water by IC	E235.NO3	854719	2	37	5.4	5.0	✓
Nitrite in Water by IC	E235.NO2	854720	2	37	5.4	5.0	✓
Sulfate in Water by IC	E235.SO4	854721	2	28	7.1	5.0	✓
Total Cyanide	E333	859041	2	33	6.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	857259	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	854740	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	859213	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	854517	2	40	5.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	858920	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	855745	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	854707	1	20	5.0	5.0	✓
WAD Cyanide	E336	859044	2	22	9.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry (Low Level)	E160-L Winnipeg - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Bromide in Water by IC	E235.Br Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Waterloo - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
Alkalinity Species by Titration	E290 Winnipeg - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia in Water by Colour	E303 Winnipeg - Environmental	Water	APHA 4500 NH3-NITROGEN (AMMONIA)	This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.
Total Kjeldahl Nitrogen by Colourimetry	E319 Winnipeg - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by colourimetric analysis.
Total Cyanide	E333 Waterloo - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Waterloo - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Free Cyanide	E339 Waterloo - Environmental	Water	ASTM D7237 (mod)	Free Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line gas diffusion followed by colourmetric analysis.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Winnipeg - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Winnipeg - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.02 mg/L)	E372 Winnipeg - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total metals in Water by CRC ICPMS	E420 Winnipeg - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Winnipeg - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Total Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection. Results are based on an un-filtered, field-preserved sample.
Total Methylmercury in Water by GCAFS	E536 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury in Water by GCAFS	E537 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Hardness (Calculated) from Total Ca/Mg	EC100A Winnipeg - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), from total Ca/Mg” is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Winnipeg - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Winnipeg - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by Combustion	EP355 Winnipeg - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Winnipeg - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Winnipeg - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Winnipeg - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration (Low Level)	EP509-L Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Total Methylmercury Water Preparation	EP536 Vancouver - Environmental	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury Water Preparation	EP537 Vancouver - Environmental	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **WP2302565**	Page	: 1 of 26
Client	: Stantec Consulting Ltd.	Laboratory	: Winnipeg - Environmental
Contact	: Karen Mathers	Account Manager	: Judy Dalmaijer
Address	: 500 - 311 Portage Ave Winnipeg MB Canada R3B 2B9	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	:	Telephone	: +1 204 255 9720
Project	: ALAMOS	Date Samples Received	: 06-Mar-2023 13:10
PO	: ----	Date Analysis Commenced	: 06-Mar-2023
C-O-C number	: ----	Issue Date	: 31-Mar-2023 13:45
Sampler	: ---- (204)489-5900		
Site	: ----		
Quote number	: Budgetary Quote		
No. of samples received	: 18		
No. of samples analysed	: 18		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

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General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 853851)											
WP2302559-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	21.2	18.7	12.5%	20%	----
Physical Tests (QC Lot: 855079)											
WP2302636-001	Anonymous	Solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.3	2.5	0.3	Diff <2x LOR	----
Physical Tests (QC Lot: 856311)											
WP2302565-001	AQM28	Acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 853867)											
WP2302565-001	AQM28	Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L	0.040	0.039	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854707)											
WP2302565-001	AQM28	Phosphorus, total	7723-14-0	E372	0.020	mg/L	0.023	0.022	0.0009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854719)											
WP2302565-001	AQM28	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	0.138	0.140	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854720)											
WP2302565-001	AQM28	Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854721)											
WP2302565-001	AQM28	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	8.48	8.53	0.502%	20%	----
Anions and Nutrients (QC Lot: 854722)											
WP2302565-001	AQM28	Chloride	16887-00-6	E235.Cl	0.50	mg/L	1.09	1.09	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854723)											
WP2302565-001	AQM28	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.060	0.060	0.0007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854724)											
WP2302565-001	AQM28	Bromide	24959-67-9	E235.Br	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854740)											
WP2302565-001	AQM28	Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	0.43	0.42	0.01	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854990)											
WP2302586-003	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	5.89	5.93	0.642%	20%	----
Anions and Nutrients (QC Lot: 854991)											
WP2302586-003	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.389	0.390	0.370%	20%	----
Anions and Nutrients (QC Lot: 854992)											
WP2302586-003	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854993)											

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Anions and Nutrients (QC Lot: 854993) - continued											
WP2302586-003	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854994)											
WP2302586-003	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	72.5	72.6	0.137%	20%	----
Cyanides (QC Lot: 859041)											
WP2302565-001	AQM28	Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 859043)											
WP2302565-001	AQM28	Cyanide, free	----	E339	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 859044)											
WP2302565-001	AQM28	Cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 859047)											
WP2302565-018	TRIP BLANK	Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 859048)											
WP2302565-018	TRIP BLANK	Cyanide, free	----	E339	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 859049)											
WP2302565-018	TRIP BLANK	Cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 854523)											
WP2302368-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	13.4	14.2	5.62%	20%	----
Organic / Inorganic Carbon (QC Lot: 855745)											
WP2302453-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.59	<0.50	0.09	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 855747)											
WP2302565-009	AQF46	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	13.4	13.4	0.252%	20%	----
Organic / Inorganic Carbon (QC Lot: 861079)											
WP2302815-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	15.2	15.8	3.82%	20%	----
Total Metals (QC Lot: 854517)											
WP2302454-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0043	0.0013	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0159	0.0157	1.21%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.076	0.074	0.002	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	19.0	18.9	0.854%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 854517) - continued											
WP2302454-001	Anonymous	Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0203	0.0205	1.12%	20%	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	25.0	24.1	3.74%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00014	0.00015	0.00001	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000360	0.000374	0.000014	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	1.81	1.80	0.952%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00082	0.00078	0.00004	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000669	0.000661	1.16%	20%	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	2.28	2.28	0.214%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	26.4	25.3	4.00%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.130	0.129	0.359%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	6.40	6.76	5.38%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.00276	0.00286	3.40%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 855816)											
WP2302552-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00024	0.00022	0.00002	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00268	0.00272	1.46%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 855816) - continued											
WP2302552-001	Anonymous	Barium, total	7440-39-3	E420	0.00010	mg/L	0.0137	0.0134	2.05%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	0.000030	0.000025	0.000006	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.875	0.916	4.57%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000276	0.0000241	0.0000035	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	81.8	83.9	2.56%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000015	0.000018	0.000002	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00107	0.00110	2.82%	20%	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00203	0.00202	0.000006	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.044	0.043	0.001	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000128	0.000128	0.0000006	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.189	0.190	0.561%	20%	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	25.6	26.1	2.10%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	1.84	1.86	1.23%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00444	0.00445	0.255%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00253	0.00256	0.00003	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	0.390	0.386	0.004	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	7.72	7.62	1.23%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00414	0.00420	1.46%	20%	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.00153	0.00155	1.23%	20%	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	13.9	14.3	2.73%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	227	227	0.246%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.709	0.679	4.38%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	153	157	2.79%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	0.000016	0.000017	0.0000008	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.00154	0.00158	2.93%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00052	<0.00050	0.00002	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 855816) - continued											
WP2302552-001	Anonymous	Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0150	0.0146	0.0004	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 859213)											
WP2302565-001	AQM28	Mercury, total	7439-97-6	E508-L	0.50	ng/L	1.34	1.25	0.09	Diff <2x LOR	----
Dissolved Metals (QC Lot: 854521)											
WP2302559-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0768	0.0740	3.78%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00963	0.00968	0.524%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.191	0.190	0.563%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.114	0.116	1.86%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	0.000071	0.000071	0.00000001	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.419	0.402	4.23%	20%	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0573	0.0583	1.75%	20%	----
		Calcium, dissolved	7440-70-2	E421	0.500	mg/L	686	660	4.00%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.00108	0.00108	0.508%	20%	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	9.93	9.93	0.00317%	20%	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	2.01	1.98	1.28%	20%	----
		Iron, dissolved	7439-89-6	E421	0.100	mg/L	553	550	0.654%	20%	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.355	0.310	13.6%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0500	mg/L	422	412	2.28%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00100	mg/L	36.9	36.7	0.710%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00717	0.00713	0.566%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00500	mg/L	32.8	32.1	2.26%	20%	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	110	105	4.47%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.112	0.109	2.72%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.0210	0.0216	2.92%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	34.1	33.2	2.68%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000016	0.000015	0.0000006	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	394	397	0.879%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	2.57	2.62	2.05%	20%	----
		Sulfur, dissolved	7704-34-9	E421	5.00	mg/L	1540	1520	0.957%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 854521) - continued											
WP2302559-001	Anonymous	Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000036	0.000035	0.0000006	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	0.00018	<0.00010	0.00008	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000214	0.000214	0.126%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0100	mg/L	16.3	16.0	1.38%	20%	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 859431)											
WP2302565-001	AQM28	Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	1.46	1.40	0.06	Diff <2x LOR	----
Speciated Metals (QC Lot: 857259)											
WP2302565-001	AQM28	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 858920)											
WP2302565-001	AQM28	Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	µg/L	0.000074	0.000085	0.000010	Diff <2x LOR	----
Speciated Metals (QC Lot: 862432)											
VA23A3446-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000800	µg/L	0.00154	0.00111	0.000427	Diff <2x LOR	----
Speciated Metals (QC Lot: 876269)											
FC2300559-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	µg/L	0.000074	0.000091	0.000017	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 853851)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 855079)						
Solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 856311)						
Acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Anions and Nutrients (QCLot: 853867)						
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 854707)						
Phosphorus, total	7723-14-0	E372	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 854719)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 854720)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 854721)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 854722)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 854723)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 854724)						
Bromide	24959-67-9	E235.Br	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 854740)						
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	<0.15	----
Anions and Nutrients (QCLot: 854989)						
Bromide	24959-67-9	E235.Br	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 854990)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 854991)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 854992)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 854993)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 854993) - continued						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 854994)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Cyanides (QCLot: 859041)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 859043)						
Cyanide, free	----	E339	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 859044)						
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 859047)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 859048)						
Cyanide, free	----	E339	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 859049)						
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 854523)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 855745)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 855747)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 861079)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 854517)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 854517) - continued						
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 855816)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 855816) - continued						
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 859213)						
Mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 854521)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 854521) - continued						
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 859431)						
Mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	<0.50	----
Speciated Metals (QCLot: 857259)						
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----
Speciated Metals (QCLot: 858920)						
Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	µg/L	<0.000020	----
Speciated Metals (QCLot: 862432)						
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	µg/L	<0.000020	----
Speciated Metals (QCLot: 866122)						
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	µg/L	<0.000020	----
Speciated Metals (QCLot: 876269)						
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	µg/L	<0.000020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 853851)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	100 mg/L	98.1	85.0	115	----
Physical Tests (QCLot: 855079)									
Solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	97.0	85.0	115	----
Physical Tests (QCLot: 856311)									
Acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	112	85.0	115	----
Anions and Nutrients (QCLot: 853867)									
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	0.25 mg/L	98.5	85.0	115	----
Anions and Nutrients (QCLot: 854707)									
Phosphorus, total	7723-14-0	E372	0.02	mg/L	0.5 mg/L	101	80.0	120	----
Anions and Nutrients (QCLot: 854719)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 854720)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	98.7	90.0	110	----
Anions and Nutrients (QCLot: 854721)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 854722)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	98.5	90.0	110	----
Anions and Nutrients (QCLot: 854723)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 854724)									
Bromide	24959-67-9	E235.Br	0.1	mg/L	0.5 mg/L	100	85.0	115	----
Anions and Nutrients (QCLot: 854740)									
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	4 mg/L	99.7	75.0	125	----
Anions and Nutrients (QCLot: 854989)									
Bromide	24959-67-9	E235.Br	0.1	mg/L	0.5 mg/L	98.7	85.0	115	----
Anions and Nutrients (QCLot: 854990)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	98.0	90.0	110	----
Anions and Nutrients (QCLot: 854991)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 854992)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	97.3	90.0	110	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 854993)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	99.0	90.0	110	----
Anions and Nutrients (QCLot: 854994)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Cyanides (QCLot: 859041)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	106	80.0	120	----
Cyanides (QCLot: 859043)									
Cyanide, free	----	E339	0.002	mg/L	0.125 mg/L	96.5	80.0	120	----
Cyanides (QCLot: 859044)									
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	99.9	80.0	120	----
Cyanides (QCLot: 859047)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	108	80.0	120	----
Cyanides (QCLot: 859048)									
Cyanide, free	----	E339	0.002	mg/L	0.125 mg/L	93.8	80.0	120	----
Cyanides (QCLot: 859049)									
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	97.3	80.0	120	----
Organic / Inorganic Carbon (QCLot: 854523)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	96.3	80.0	120	----
Organic / Inorganic Carbon (QCLot: 855745)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 855747)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	97.9	80.0	120	----
Organic / Inorganic Carbon (QCLot: 861079)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	94.9	80.0	120	----
Total Metals (QCLot: 854517)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	93.4	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.1	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	94.6	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	93.8	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	89.3	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 854517) - continued									
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	91.0	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	90.3	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	91.9	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	92.1	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	89.8	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	95.4	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.3	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	92.4	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	90.0	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	102	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	92.2	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	97.9	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	86.0	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	93.0	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	95.5	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	114	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	94.0	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	94.3	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	88.8	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.4	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	98.1	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	94.4	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	92.8	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	92.5	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	93.3	80.0	120	----
Total Metals (QCLot: 855816)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	94.7	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	95.1	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	92.8	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 855816) - continued									
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	95.0	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.8	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	95.1	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	90.8	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	95.4	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	95.2	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	94.6	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	95.6	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	93.3	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	93.1	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	91.8	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	93.3	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	107	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	97.9	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	99.5	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	89.2	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	97.6	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	96.8	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	103	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	93.8	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	90.6	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	94.3	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	95.4	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	95.3	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.9	80.0	120	----
Total Metals (QCLot: 859213)									
Mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	95.9	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 854521)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	95.9	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.5	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	93.1	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.6	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.3	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.5	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	93.2	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	91.3	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	90.1	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	91.2	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	91.8	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	91.0	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	85.1	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.4	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	92.2	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	94.0	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.7	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	91.3	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	99.8	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	89.1	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	98.1	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.4	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.1	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	83.4	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	91.3	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	93.2	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.2	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	95.8	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	95.2	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	92.6	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.4	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.4	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	100	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 854521) - continued									
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.0	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	92.5	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	92.8	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	92.6	80.0	120	----
Mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	95.9	80.0	120	----
Speciated Metals (QCLot: 857259)									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.025 mg/L	98.6	80.0	120	----
Speciated Metals (QCLot: 858920)									
Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	µg/L	0.0025 µg/L	79.6	70.0	130	----
Speciated Metals (QCLot: 862432)									
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	µg/L	0.0025 µg/L	84.9	70.0	130	----
Speciated Metals (QCLot: 866122)									
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	µg/L	0.0025 µg/L	82.6	70.0	130	----
Speciated Metals (QCLot: 876269)									
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	µg/L	0.0025 µg/L	74.5	70.0	130	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 853867)										
WP2302565-001	AQM28	Ammonia, total (as N)	7664-41-7	E303	0.230 mg/L	0.25 mg/L	91.9	75.0	125	----
Anions and Nutrients (QCLot: 854707)										
WP2302565-002	AQM29C	Phosphorus, total	7723-14-0	E372	0.246 mg/L	0.25 mg/L	98.2	70.0	130	----
Anions and Nutrients (QCLot: 854719)										
WP2302565-001	AQM28	Nitrate (as N)	14797-55-8	E235.NO3	2.56 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 854720)										
WP2302565-001	AQM28	Nitrite (as N)	14797-65-0	E235.NO2	0.500 mg/L	0.5 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 854721)										
WP2302565-001	AQM28	Sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 854722)										
WP2302565-001	AQM28	Chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 854723)										
WP2302565-001	AQM28	Fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 854724)										
WP2302565-001	AQM28	Bromide	24959-67-9	E235.Br	0.51 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 854740)										
WP2302565-001	AQM28	Kjeldahl nitrogen, total [TKN]	----	E319	4.70 mg/L	5 mg/L	93.9	70.0	130	----
Anions and Nutrients (QCLot: 854990)										
WP2302586-003	Anonymous	Chloride	16887-00-6	E235.Cl	99.9 mg/L	100 mg/L	99.9	75.0	125	----
Anions and Nutrients (QCLot: 854991)										
WP2302586-003	Anonymous	Fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 854992)										
WP2302586-003	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.493 mg/L	0.5 mg/L	98.5	75.0	125	----
Anions and Nutrients (QCLot: 854993)										
WP2302586-003	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	2.52 mg/L	2.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 854994)										
WP2302586-003	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	99.3 mg/L	100 mg/L	99.3	75.0	125	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 859041)										
WP2302565-001	AQM28	Cyanide, strong acid dissociable (Total)	----	E333	0.259 mg/L	0.25 mg/L	104	75.0	125	----
Cyanides (QCLot: 859043)										
WP2302565-001	AQM28	Cyanide, free	----	E339	0.130 mg/L	0.125 mg/L	104	75.0	125	----
Cyanides (QCLot: 859044)										
WP2302565-001	AQM28	Cyanide, weak acid dissociable	----	E336	0.134 mg/L	0.125 mg/L	107	75.0	125	----
Cyanides (QCLot: 859047)										
WP2302565-018	TRIP BLANK	Cyanide, strong acid dissociable (Total)	----	E333	0.278 mg/L	0.25 mg/L	111	75.0	125	----
Cyanides (QCLot: 859048)										
WP2302565-018	TRIP BLANK	Cyanide, free	----	E339	0.129 mg/L	0.125 mg/L	103	75.0	125	----
Cyanides (QCLot: 859049)										
WP2302565-018	TRIP BLANK	Cyanide, weak acid dissociable	----	E336	0.133 mg/L	0.125 mg/L	106	75.0	125	----
Organic / Inorganic Carbon (QCLot: 854523)										
WP2302368-002	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 855745)										
WP2302454-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	4.53 mg/L	5 mg/L	90.7	70.0	130	----
Organic / Inorganic Carbon (QCLot: 855747)										
WP2302565-010	AQF42	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 861079)										
WP2302815-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	ND mg/L	5 mg/L	ND	70.0	130	----
Total Metals (QCLot: 854517)										
WP2302454-001	Anonymous	Aluminum, total	7429-90-5	E420	0.218 mg/L	0.2 mg/L	109	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0234 mg/L	0.02 mg/L	117	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0224 mg/L	0.02 mg/L	112	70.0	130	----
		Barium, total	7440-39-3	E420	0.0225 mg/L	0.02 mg/L	113	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0111 mg/L	0.01 mg/L	111	70.0	130	----
		Boron, total	7440-42-8	E420	0.071 mg/L	0.1 mg/L	70.8	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00450 mg/L	0.004 mg/L	112	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0109 mg/L	0.01 mg/L	109	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0436 mg/L	0.04 mg/L	109	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0213 mg/L	0.02 mg/L	107	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 854517) - continued										
WP2302454-001	Anonymous	Copper, total	7440-50-8	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		Iron, total	7439-89-6	E420	2.17 mg/L	2 mg/L	108	70.0	130	----
		Lead, total	7439-92-1	E420	0.0211 mg/L	0.02 mg/L	105	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0802 mg/L	0.1 mg/L	80.2	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0217 mg/L	0.02 mg/L	109	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0232 mg/L	0.02 mg/L	116	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		Phosphorus, total	7723-14-0	E420	11.2 mg/L	10 mg/L	112	70.0	130	----
		Potassium, total	7440-09-7	E420	4.32 mg/L	4 mg/L	108	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0220 mg/L	0.02 mg/L	110	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0443 mg/L	0.04 mg/L	111	70.0	130	----
		Silicon, total	7440-21-3	E420	11.3 mg/L	10 mg/L	113	70.0	130	----
		Silver, total	7440-22-4	E420	0.00436 mg/L	0.004 mg/L	109	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	23.0 mg/L	20 mg/L	115	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0458 mg/L	0.04 mg/L	114	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00420 mg/L	0.004 mg/L	105	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0223 mg/L	0.02 mg/L	112	70.0	130	----
		Tin, total	7440-31-5	E420	0.0230 mg/L	0.02 mg/L	115	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0467 mg/L	0.04 mg/L	117	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0233 mg/L	0.02 mg/L	117	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00426 mg/L	0.004 mg/L	106	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.112 mg/L	0.1 mg/L	112	70.0	130	----
		Zinc, total	7440-66-6	E420	0.438 mg/L	0.4 mg/L	109	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0472 mg/L	0.04 mg/L	118	70.0	130	----
Total Metals (QCLot: 855816)										
WP2302552-001	Anonymous	Aluminum, total	7429-90-5	E420	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Barium, total	7440-39-3	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00990 mg/L	0.01 mg/L	99.0	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 855816) - continued										
WP2302552-001	Anonymous	Cadmium, total	7440-43-9	E420	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0100 mg/L	0.01 mg/L	100	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		Copper, total	7440-50-8	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		Iron, total	7439-89-6	E420	2.03 mg/L	2 mg/L	102	70.0	130	----
		Lead, total	7439-92-1	E420	0.0184 mg/L	0.02 mg/L	92.3	70.0	130	----
		Lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		Phosphorus, total	7723-14-0	E420	10.9 mg/L	10 mg/L	109	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.00373 mg/L	0.004 mg/L	93.3	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		Tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00382 mg/L	0.004 mg/L	95.5	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		Zinc, total	7440-66-6	E420	0.390 mg/L	0.4 mg/L	97.6	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
Total Metals (QCLot: 859213)										
WP2302565-002	AQM29C	Mercury, total	7439-97-6	E508-L	5.49 ng/L	5 ng/L	110	70.0	130	----
Dissolved Metals (QCLot: 854521)										

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 854521) - continued										
WP2302559-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.186 mg/L	0.2 mg/L	92.8	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0346 mg/L	0.04 mg/L	86.6	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00848 mg/L	0.01 mg/L	84.8	70.0	130	----
		Boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00922 mg/L	0.01 mg/L	92.2	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0369 mg/L	0.04 mg/L	92.2	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Copper, dissolved	7440-50-8	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0172 mg/L	0.02 mg/L	85.9	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.0 mg/L	10 mg/L	100	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0529 mg/L	0.04 mg/L	132	70.0	130	MES
		Silicon, dissolved	7440-21-3	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00326 mg/L	0.004 mg/L	81.5	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00338 mg/L	0.004 mg/L	84.6	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 854521) - continued										
WP2302559-001	Anonymous	Uranium, dissolved	7440-61-1	E421	0.00355 mg/L	0.004 mg/L	88.7	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0990 mg/L	0.1 mg/L	99.0	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0438 mg/L	0.04 mg/L	109	70.0	130	----
Dissolved Metals (QCLot: 859431)										
WP2302565-002	AQM29C	Mercury, dissolved	7439-97-6	E509-L	4.83 ng/L	5 ng/L	96.7	70.0	130	----
Speciated Metals (QCLot: 857259)										
WP2302565-001	AQM28	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0389 mg/L	0.04 mg/L	97.4	70.0	130	----
Speciated Metals (QCLot: 858920)										
WP2302565-002	AQM29C	Methylmercury (as MeHg), total	22967-92-6	E536	0.00477 µg/L	0.0025 µg/L	95.4	60.0	140	----
Speciated Metals (QCLot: 862432)										
VA23A3446-002	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.0713 µg/L	0.0025 µg/L	71.3	60.0	140	----
Speciated Metals (QCLot: 876269)										
WP2302565-017	FIELD BLANK	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00169 µg/L	0.0025 µg/L	67.6	60.0	140	----

Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 2

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Environmental Division Winnipeg

Work Order Reference WP2302565

Telephone : +1 204 255 9720

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients	
Select Report Format:	☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Karen.Mathers@Stantec.com
Email 2	Brad.Horne@stantec.com
Email 3	Jeremy.Jackson@stantec.com

Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	

Turnaround Time (TAT) Requested
☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.
Additional fees may apply to rush requests on weekends, st
Date and Time Required for all E&P TATs:
For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q88846	AFE/Cost Center:	PO#
Job #:	ALAMOS	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: SD

Sampler: BB, AR

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	CN-T-L, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	HG-T-U-CVAF, HG-D-U-CVAG	MEHG-T-GCAF, MEHG-D-GCAF	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
1	AQM38	28-03-23	0949	W	13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
2	AQM39C		1033																		
3	AQM71		1105																		
4	AQM72		1139																		
5	AQM73		1215																		
6	AQF75		1403																		
7	AQF70		1441																		
8	AQF38		1505																		
9	AQF46		1533																		
10	AQF43		1606																		
11	QC-01		-																		
12	AQF45	01-03-23	0916																		

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	All dissolved bottles field filtered
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE RECEIPT DETAILS (ALS use only)								
Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED								
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO								
Cooler Custody Seals Intact: ☐ YES ☐ N/A	Sample Custody Seals Intact: ☐ YES ☐ N/A							
INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C				
				4.4				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: BLippert	Date: March 2 '23	Time: 0930	Received by:	Date: MAR 06 2023	Time: 1310	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

2565

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 2

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Karen.Mathers@Stantec.com

Email 2: Brad.Horne@stantec.com

Email 3: Jeremy.Jackson@stantec.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax:

Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	Q88846
Job #:	ALAMOS
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: DD

Sampler: BE, AR

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	CN-T-L, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	HG-T-U-CVAF, HG-D-U-CVAG	MEHG-T-GCAF, MEHG-D-GCAF	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
13	AQF44	01-03-23	0945	W	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
14	AQF43	"	1015	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
15	AQF40	"	1053	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
16	AQF41	"	1133	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
17	FIELD BLANK	"	1315	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
18	TRIP BLANK	-	-	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

All dissolved bottles field filtered

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				9.4			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
B Lynd	March 2/23	0930

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
	MAR 06 2023	1310

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

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1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **WP2302565**	Page	: 1 of 19
Amendment	: **1**		
Client	: **Alamos Gold Inc.**	Laboratory	: Winnipeg - Environmental
Contact	: Karen Mathers	Account Manager	: Judy Dalmaijer
Address	: C/O Stantec Consulting 500 - 311 Portage Avenue Winnipeg MB Canada R3B 2B9	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg MB Canada R2J 3T4
Telephone	: 416 368 9932	Telephone	: +1 204 255 9720
Project	: ----	Date Samples Received	: 06-Mar-2023 13:10
PO	: ----	Date Analysis Commenced	: 06-Mar-2023
C-O-C number	: ----	Issue Date	: 06-Apr-2023 13:43
Sampler	: ----		
Site	: ----		
Quote number	: ALAMOS Gold Inc. - (Q88846)_V2		
No. of samples received	: 18		
No. of samples analysed	: 18		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Christine Mason	Department Manager - Chemistry	Inorganics, Winnipeg, Manitoba
Christine Mason	Department Manager - Chemistry	Metals, Winnipeg, Manitoba
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario
Jayden Piattelli	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Inorganics, Waterloo, Ontario
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Lee McTavish		Inorganics, Winnipeg, Manitoba
Matthew Bouch		Metals, Winnipeg, Manitoba
Oleksandr Busel		Inorganics, Winnipeg, Manitoba
Parnian Sane	Analyst	Metals, Burnaby, British Columbia
Zandrea Grabinski		Inorganics, Winnipeg, Manitoba

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µg/L	micrograms per litre
mg/L	milligrams per litre
ng/L	nanograms per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM28	AQM29C	AQM71	AQM72	AQM73
					Client sampling date / time	28-Feb-2023 09:49	28-Feb-2023 10:23	28-Feb-2023 11:05	28-Feb-2023 11:39	28-Feb-2023 12:15
						WP2302565-001	WP2302565-002	WP2302565-003	WP2302565-004	WP2302565-005
						Result	Result	Result	Result	Result
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	2.6	3.3	28.2	5.4
Alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L		12.8	9.2	150	25.4	21.3
Alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		12.8	9.2	150	25.4	21.3
Hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L		21.7	13.2	142	37.2	33.8
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		<1.0	<1.0	3.3	5.8	<1.0
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		0.040	0.021	0.339	0.052	0.011
Bromide	24959-67-9	E235.Br	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Chloride	16887-00-6	E235.Cl	0.50	mg/L		1.09	<0.50	3.30	2.06	0.97
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.060	0.061	0.046	0.090	0.049
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.43	0.30	1.30	2.06	1.31
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.138	0.114	0.064	0.103	0.037
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus, total	7723-14-0	E372	0.020	mg/L		0.023	<0.020	0.051	0.086	0.088
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		8.48	1.50	0.61	4.97	1.60
Cyanides										
Cyanide, free	----	E339	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	0.0056	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		12.6	10.0	24.0	64.6	51.5
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		12.8	9.95	23.3	64.4	52.1
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.119	0.0310	0.0862	0.316	0.167
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	0.00028	0.00039	<0.00010
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00030	0.00020	0.00057	0.00091	0.00080
Barium, total	7440-39-3	E420	0.00010	mg/L		0.0100	0.00760	0.0264	0.0238	0.00919

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM28	AQM29C	AQM71	AQM72	AQM73
					Client sampling date / time	28-Feb-2023 09:49	28-Feb-2023 10:23	28-Feb-2023 11:05	28-Feb-2023 11:39	28-Feb-2023 12:15
						WP2302565-001	WP2302565-002	WP2302565-003	WP2302565-004	WP2302565-005
						Result	Result	Result	Result	Result
Total Metals										
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	0.000026	<0.000020
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	0.011	<0.010
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000186	0.0000067	0.0000231	0.0000446	0.0000196
Calcium, total	7440-70-2	E420	0.050	mg/L		6.44	3.80	45.0	10.4	9.72
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	0.000020	0.000027
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	0.00055	0.00143	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00048	<0.00010	0.00199	0.00038	0.00054
Copper, total	7440-50-8	E420	0.00050	mg/L		0.00357	0.00068	0.00112	0.00229	<0.00050
Iron, total	7439-89-6	E420	0.010	mg/L		1.35	0.302	3.43	5.82	1.60
Lead, total	7439-92-1	E420	0.000050	mg/L		0.000075	<0.000050	0.000105	0.000343	0.000092
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0017	0.0013	0.0020	0.0044	0.0026
Magnesium, total	7439-95-4	E420	0.0050	mg/L		1.36	0.898	7.30	2.73	2.31
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.0310	0.00944	1.77	0.100	0.190
Mercury, total	7439-97-6	E508-L	0.50	ng/L		1.34	0.65	4.38	4.94	6.60
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000072	<0.000050	0.000280	0.000126	0.000069
Nickel, total	7440-02-0	E420	0.00050	mg/L		0.0366	0.00350	0.00138	0.00188	0.00144
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	0.052	0.078	0.087
Potassium, total	7440-09-7	E420	0.050	mg/L		0.798	0.744	2.08	5.51	2.32
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00106	0.00118	0.00260	0.00869	0.00352
Selenium, total	7782-49-2	E420	0.000050	mg/L		0.000057	<0.000050	0.000082	0.000223	0.000097
Silicon, total	7440-21-3	E420	0.10	mg/L		4.04	3.76	13.4	13.8	10.1
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		1.69	1.38	4.33	4.10	2.02
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0214	0.0155	0.0714	0.0327	0.0214
Sulfur, total	7704-34-9	E420	0.50	mg/L		2.09	2.09	1.38	34.5	<0.50
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	0.000019	<0.000010
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00016	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00051	0.00050	0.0125	<0.00010

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQM28	AQM29C	AQM71	AQM72	AQM73
					Client sampling date / time	28-Feb-2023 09:49	28-Feb-2023 10:23	28-Feb-2023 11:05	28-Feb-2023 11:39	28-Feb-2023 12:15
Analyte	CAS Number	Method	LOR	Unit		WP2302565-001	WP2302565-002	WP2302565-003	WP2302565-004	WP2302565-005
						Result	Result	Result	Result	Result
Total Metals										
Titanium, total	7440-32-6	E420	0.00030	mg/L		0.00185	0.00061	0.00301	0.00751	0.00293
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.000024	0.000024	0.000108	0.000074	<0.000010
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	0.00059	0.00112	<0.00050
Zinc, total	7440-66-6	E420	0.0030	mg/L		0.0165	0.0115	0.0092	0.0315	0.0070
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	0.00040	0.00078	0.00029
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0807	0.0142	0.0600	0.228	0.148
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00017	<0.00010
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00022	0.00016	0.00054	0.00078	0.00079
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00949	0.00714	0.0238	0.0219	0.00993
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	0.000021	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	0.010	<0.010
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000124	<0.0000050	0.0000122	0.0000321	0.0000218
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		6.55	3.06	39.7	10.1	9.69
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	0.000011	0.000024
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	0.00105	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00022	<0.00010	0.00192	0.00035	0.00054
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00224	0.00051	0.00064	0.00206	0.00061
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.954	0.186	3.23	4.26	1.45
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000055	<0.000050	0.000067	0.000234	0.000074
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0013	0.0012	0.0016	0.0038	0.0023
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		1.48	0.830	7.05	2.78	2.36
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0234	0.00700	1.74	0.0890	0.178
Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L		1.46	<0.50	2.58	4.86	6.13
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000068	<0.000050	0.000250	0.000104	0.000060
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.0322	0.00329	0.00142	0.00172	0.00156
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	0.068
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.806	0.656	1.90	5.24	2.21

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM28	AQM29C	AQM71	AQM72	AQM73
					Client sampling date / time	28-Feb-2023 09:49	28-Feb-2023 10:23	28-Feb-2023 11:05	28-Feb-2023 11:39	28-Feb-2023 12:15
						WP2302565-001	WP2302565-002	WP2302565-003	WP2302565-004	WP2302565-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00109	0.00112	0.00252	0.00820	0.00337
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000090	<0.000050	0.000097	0.000185	0.000120
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.90	3.31	12.4	12.4	9.80
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.83	1.28	4.09	4.04	2.05
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0229	0.0141	0.0691	0.0311	0.0218
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		2.38	0.99	1.53	2.74	<0.50
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	0.000014	<0.000010
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00014	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	0.00040	0.00054	<0.00010
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00085	<0.00030	0.00214	0.00532	0.00247
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000023	0.000020	0.000098	0.000064	<0.000010
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	0.00071	<0.00050
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0166	0.0025	0.0093	0.0120	0.0071
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	0.00045	0.00078	0.00038
Dissolved MeHg filtration location	----	EP537	-	-		Field	Field	Field	Field	Field
Dissolved mercury filtration location	----	EP509-L	-	-		Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		<0.00050	<0.00050	<0.00050	0.00056	0.00156 RRV
Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	µg/L		0.000074	0.000043	0.00176	0.000309	0.000261
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	µg/L		<0.000020	0.000052	0.000365	0.000233	0.000178

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF7S	AQF7D	AQF38	AQF46	AQF42
					Client sampling date / time	28-Feb-2023 01:03	28-Feb-2023 14:41	28-Feb-2023 15:05	28-Feb-2023 15:33	28-Feb-2023 16:06
						WP2302565-006	WP2302565-007	WP2302565-008	WP2302565-009	WP2302565-010
						Result	Result	Result	Result	Result
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	5.7	<2.0
Alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L		17.1	16.3	24.6	32.7	6.0
Alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		17.1	16.3	24.6	32.7	6.0
Hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L		20.1	19.0	35.7	44.3	13.2
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		<1.0	<1.0	<1.0	3.1	2.5
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		<0.010	<0.010	0.014	0.237	0.033
Bromide	24959-67-9	E235.Br	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	0.86	1.22	0.56
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.049	0.044	0.105	0.051	0.071
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.29	0.29	0.45	0.82	0.39
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.078	0.114	0.156	0.105	0.121
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus, total	7723-14-0	E372	0.020	mg/L		<0.020	<0.020	<0.020	0.023	0.025
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.27	0.88	9.02	11.2	9.60
Cyanides										
Cyanide, free	----	E339	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		10.1	9.68	14.8	13.4	9.50
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		12.0	9.02	13.5	14.9	10.1
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0207	0.0224	0.0214	0.0295	0.0675
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00043	0.00029
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00027	0.00022	0.00026	0.00044	0.00023
Barium, total	7440-39-3	E420	0.00010	mg/L		0.00871	0.00980	0.0160	0.0142	0.00832
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF7S	AQF7D	AQF38	AQF46	AQF42
					Client sampling date / time	28-Feb-2023 01:03	28-Feb-2023 14:41	28-Feb-2023 15:05	28-Feb-2023 15:33	28-Feb-2023 16:06
						WP2302565-006	WP2302565-007	WP2302565-008	WP2302565-009	WP2302565-010
						Result	Result	Result	Result	Result
Total Metals										
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	0.0000096	0.0000107
Calcium, total	7440-70-2	E420	0.050	mg/L		4.91	4.70	9.95	13.3	3.62
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	0.00064	0.00099
Iron, total	7439-89-6	E420	0.010	mg/L		0.054	0.070	0.081	0.583	0.353
Lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	0.000065	0.000082
Lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	0.0011	0.0011	0.0012
Magnesium, total	7439-95-4	E420	0.0050	mg/L		1.91	1.76	2.63	2.70	1.00
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.00241	0.0354	0.0142	0.109	0.0206
Mercury, total	7439-97-6	E508-L	0.50	ng/L		0.76	0.71	0.53	0.97	1.01
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000076	0.000052	0.00203	0.000067	0.000070
Nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7	E420	0.050	mg/L		0.630	0.559	0.776	1.06	0.716
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00112	0.00103	0.00120	0.00128	0.00117
Selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	0.000051	0.000068	<0.000050	<0.000050
Silicon, total	7440-21-3	E420	0.10	mg/L		1.15	1.27	2.12	1.78	3.44
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		1.28	1.14	1.64	1.61	1.40
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0152	0.0151	0.0263	0.0227	0.0151
Sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	0.58	2.47	8.56
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00036	0.00019	0.00071	0.00209
Titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	0.00069	0.00229

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQF7S	AQF7D	AQF38	AQF46	AQF42
					Client sampling date / time	28-Feb-2023 01:03	28-Feb-2023 14:41	28-Feb-2023 15:05	28-Feb-2023 15:33	28-Feb-2023 16:06
Analyte	CAS Number	Method	LOR	Unit		WP2302565-006	WP2302565-007	WP2302565-008	WP2302565-009	WP2302565-010
						Result	Result	Result	Result	Result
Total Metals										
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		<0.000010	<0.000010	0.000011	<0.000010	0.000044
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	0.0056	0.0448	0.0256
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0190	0.0191	0.0178	0.0157	0.0241
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00023	0.00022	0.00022	0.00034	0.00019
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00860	0.0221	0.0157	0.0269	0.0204
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	0.0000054	<0.0000050
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		4.70	5.03	9.81	12.4	3.36
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00022	0.00124	<0.00020	0.00194	0.00197
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.044	0.047	0.060	0.448	0.200
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	0.000073	0.000077
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	0.0011	0.0010
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		1.70	1.59	2.67	2.82	1.01
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00190	0.0232	0.00837	0.0594	0.0143
Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L		1.04	0.83	0.60	0.65	<0.50
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000072	0.000065	0.00196	0.000060	0.000074
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.576	0.524	0.737	1.02	0.752
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00112	0.00093	0.00110	0.00122	0.00112

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQF7S	AQF7D	AQF38	AQF46	AQF42
					Client sampling date / time	28-Feb-2023 01:03	28-Feb-2023 14:41	28-Feb-2023 15:05	28-Feb-2023 15:33	28-Feb-2023 16:06
Analyte	CAS Number	Method	LOR	Unit		WP2302565-006	WP2302565-007	WP2302565-008	WP2302565-009	WP2302565-010
						Result	Result	Result	Result	Result
Dissolved Metals										
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000052	<0.000050	0.000063	0.000067	<0.000050
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		1.08	1.16	2.07	1.70	3.26
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.23	1.15	1.65	1.59	1.40
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0144	0.0148	0.0258	0.0236	0.0151
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1.26	0.57	0.55	<0.50	0.55
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00016	0.00076	<0.00010	0.00016	0.00018
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	0.00041
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		<0.000010	<0.000010	0.000011	<0.000010	0.000031
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0025	0.0033	0.0025	0.0048	0.0049
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved MeHg filtration location	----	EP537	-	-		Field	Field	Field	Field	Field
Dissolved mercury filtration location	----	EP509-L	-	-		Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	µg/L		0.000063	0.000190	0.000021	0.000259	0.000029
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	µg/L		0.000094	0.000044	0.000042	0.000059	0.000040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	QC-01	AQF45	AQF44	AQF43	AQF40
					Client sampling date / time	28-Feb-2023	01-Mar-2023 09:16	01-Mar-2023 09:45	01-Mar-2023 10:15	01-Mar-2023 10:53
Analyte	CAS Number	Method	LOR	Unit		WP2302565-011	WP2302565-012	WP2302565-013	WP2302565-014	WP2302565-015
						Result	Result	Result	Result	Result
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L		20.1	7.7	12.9	9.3	3.6
Alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		20.1	7.7	12.9	9.3	3.6
Hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L		19.6	15.6	13.5	12.6	12.9
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		<1.0	1.1	<1.0	<1.0	<1.0
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		0.017	0.012	0.014	<0.010	0.013
Bromide	24959-67-9	E235.Br	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	3.82	3.22	<0.50	0.69
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.050	0.074	0.072	0.074	0.074
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.35	0.28	0.29	0.27	0.31
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.075	0.101	0.112	0.120	0.102
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus, total	7723-14-0	E372	0.020	mg/L		<0.020	<0.020	<0.020	<0.020	<0.020
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.00	6.54	8.26	2.15	8.08
Cyanides										
Cyanide, free	----	E339	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		9.65	8.95	8.95	9.09	9.63
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		10.1	10.7	9.22	8.78	9.66
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0208	0.0499	0.0364	0.0359	0.0357
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	0.00014
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00026	0.00019	0.00021	0.00018	0.00018
Barium, total	7440-39-3	E420	0.00010	mg/L		0.00888	0.00704	0.00694	0.00690	0.00702
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	QC-01	AQF45	AQF44	AQF43	AQF40
					Client sampling date / time	28-Feb-2023	01-Mar-2023 09:16	01-Mar-2023 09:45	01-Mar-2023 10:15	01-Mar-2023 10:53
Analyte	CAS Number	Method	LOR	Unit		WP2302565-011	WP2302565-012	WP2302565-013	WP2302565-014	WP2302565-015
						Result	Result	Result	Result	Result
Total Metals										
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium, total	7440-70-2	E420	0.050	mg/L		4.73	4.41	3.72	3.41	3.52
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, total	7439-89-6	E420	0.010	mg/L		0.053	0.296	0.295	0.291	0.282
Lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	0.0012	0.0013	0.0012	0.0013
Magnesium, total	7439-95-4	E420	0.0050	mg/L		1.88	1.12	1.03	0.983	0.998
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.00232	0.0108	0.0106	0.0108	0.0107
Mercury, total	7439-97-6	E508-L	0.50	ng/L		0.74	0.99	0.76	0.81	0.85
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000071	0.000066	0.000056	<0.000050	0.000051
Nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7	E420	0.050	mg/L		0.608	0.617	0.656	0.598	0.637
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00114	0.00110	0.00114	0.00113	0.00110
Selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon, total	7440-21-3	E420	0.10	mg/L		1.17	3.32	3.34	3.34	3.38
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		1.28	1.38	1.40	1.33	1.36
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0148	0.0161	0.0156	0.0149	0.0153
Sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	0.82	4.43	<0.50	1.95
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00011	0.00116	<0.00010	0.00055
Titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	0.00124	0.00106	0.00088	0.00086

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	QC-01	AQF45	AQF44	AQF43	AQF40
					Client sampling date / time	28-Feb-2023	01-Mar-2023 09:16	01-Mar-2023 09:45	01-Mar-2023 10:15	01-Mar-2023 10:53
						WP2302565-011	WP2302565-012	WP2302565-013	WP2302565-014	WP2302565-015
						Result	Result	Result	Result	Result
Total Metals										
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.000010	0.000028	0.000028	0.000025	0.000024
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	0.0043	0.0083	0.0034	0.0108
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	0.00032
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0183	0.0212	0.0220	0.0205	0.0209
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00022	0.00016	0.00017	0.00015	0.00017
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00870	0.00662	0.0169	0.00660	0.0203
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		4.79	3.73	3.37	3.24	3.20
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	0.00043	0.00189	0.00025	0.00171
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.041	0.173	0.180	0.181	0.175
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	0.000072
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		1.73	1.07	1.00	0.951	0.951
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00191	0.00647	0.00688	0.00678	0.00708
Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L		0.81	0.82	0.89	0.98	0.94
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000068	0.000059	0.000063	<0.000050	0.000055
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.595	0.580	0.619	0.562	0.600
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00106	0.00100	0.00114	0.00100	0.00108

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	QC-01	AQF45	AQF44	AQF43	AQF40
					Client sampling date / time	28-Feb-2023	01-Mar-2023 09:16	01-Mar-2023 09:45	01-Mar-2023 10:15	01-Mar-2023 10:53
Analyte	CAS Number	Method	LOR	Unit		WP2302565-011	WP2302565-012	WP2302565-013	WP2302565-014	WP2302565-015
						Result	Result	Result	Result	Result
Dissolved Metals										
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000051	<0.000050	<0.000050	<0.000050	<0.000050
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		1.09	3.06	3.17	3.11	3.08
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.26	1.36	1.33	1.29	1.33
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0146	0.0152	0.0149	0.0146	0.0142
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		0.59	1.90	0.50	<0.50	0.61
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	0.00018	0.00011	<0.00010	0.00015
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000010	0.000024	0.000022	0.000022	0.000022
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0023	0.0024	0.0025	<0.0010	0.0031
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved MeHg filtration location	----	EP537	-	-		Field	Field	Field	Field	Field
Dissolved mercury filtration location	----	EP509-L	-	-		Field	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	µg/L		0.000038	0.000039	0.000038	0.000035	0.000035
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	µg/L		0.000040	0.000051	0.000029	0.000066	0.000022

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQF41	FIELD BLANK	TRIP BLANK	----	----
					Client sampling date / time	01-Mar-2023 11:32	01-Mar-2023 15:15	01-Mar-2023	----	----
Analyte	CAS Number	Method	LOR	Unit		WP2302565-016	WP2302565-017	WP2302565-018	--------	--------
						Result	Result	Result	----	----
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	<2.0	----	----
Alkalinity, bicarbonate (as CaCO3)	----	E290	2.0	mg/L		10.9	<2.0	<2.0	----	----
Alkalinity, carbonate (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290	2.0	mg/L		<2.0	<2.0	<2.0	----	----
Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		10.9	<2.0	<2.0	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L		12.6	<0.50	<0.50	----	----
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		5.3	<1.0	<1.0	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		0.038	<0.010	0.042	----	----
Bromide	24959-67-9	E235.Br	0.10	mg/L		<0.10	<0.10	<0.10	----	----
Chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	<0.50	<0.50	----	----
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.076	<0.020	<0.020	----	----
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.35	<0.15	<0.15	----	----
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.122	<0.020	<0.020	----	----
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.010	<0.010	<0.010	----	----
Phosphorus, total	7723-14-0	E372	0.020	mg/L		0.027	<0.020	<0.020	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.04	<0.30	<0.30	----	----
Cyanides										
Cyanide, free	----	E339	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
Cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		9.21	<0.50	0.76	----	----
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		10.5	<0.50	<0.50	----	----
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.105	<0.0030	<0.0030	----	----
Antimony, total	7440-36-0	E420	0.00010	mg/L		0.00012	<0.00010	<0.00010	----	----
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00022	<0.00010	<0.00010	----	----
Barium, total	7440-39-3	E420	0.00010	mg/L		0.00882	<0.00010	<0.00010	----	----
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF41	FIELD BLANK	TRIP BLANK	----	----
					Client sampling date / time	01-Mar-2023 11:32	01-Mar-2023 15:15	01-Mar-2023	----	----
						WP2302565-016	WP2302565-017	WP2302565-018	--------	--------
						Result	Result	Result	----	----
Total Metals										
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	----	----
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000111	<0.0000050	<0.0000050	----	----
Calcium, total	7440-70-2	E420	0.050	mg/L		3.37	<0.050	<0.050	----	----
Cesium, total	7440-46-2	E420	0.000010	mg/L		0.000011	<0.000010	<0.000010	----	----
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00010	<0.00010	<0.00010	----	----
Copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Iron, total	7439-89-6	E420	0.010	mg/L		0.586	<0.010	<0.010	----	----
Lead, total	7439-92-1	E420	0.000050	mg/L		0.000094	<0.000050	<0.000050	----	----
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0013	<0.0010	<0.0010	----	----
Magnesium, total	7439-95-4	E420	0.0050	mg/L		1.02	<0.0050	<0.0050	----	----
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.0670	<0.00010	<0.00010	----	----
Mercury, total	7439-97-6	E508-L	0.50	ng/L		1.16	<0.50	<0.50	----	----
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000058	<0.000050	<0.000050	----	----
Nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	----	----
Potassium, total	7440-09-7	E420	0.050	mg/L		0.708	<0.050	<0.050	----	----
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00131	<0.00020	<0.00020	----	----
Selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Silicon, total	7440-21-3	E420	0.10	mg/L		3.44	<0.10	<0.10	----	----
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Sodium, total	7440-23-5	E420	0.050	mg/L		1.34	<0.050	<0.050	----	----
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0154	<0.00020	<0.00020	----	----
Sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	<0.50	----	----
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Titanium, total	7440-32-6	E420	0.00030	mg/L		0.00459	<0.00030	<0.00030	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQF41	FIELD BLANK	TRIP BLANK	----	----
					Client sampling date / time	01-Mar-2023 11:32	01-Mar-2023 15:15	01-Mar-2023	----	----
Analyte	CAS Number	Method	LOR	Unit		WP2302565-016	WP2302565-017	WP2302565-018	--------	--------
						Result	Result	Result	----	----
Total Metals										
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.000037	<0.000010	<0.000010	----	----
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Zinc, total	7440-66-6	E420	0.0030	mg/L		0.0052	<0.0030	<0.0030	----	----
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0229	<0.0010	<0.0010	----	----
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00016	<0.00010	<0.00010	----	----
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00720	0.00359	<0.00010	----	----
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	----	----
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		3.36	<0.050	<0.050	----	----
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00030	0.00096	<0.00020	----	----
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.194	<0.010	<0.010	----	----
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0010	<0.0010	<0.0010	----	----
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		0.976	<0.0050	<0.0050	----	----
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00968	<0.00010	<0.00010	----	----
Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L		1.13	<0.50	<0.50	----	----
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000053	<0.000050	<0.000050	----	----
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	----	----
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.617	<0.050	<0.050	----	----
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00107	<0.00020	<0.00020	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQF41	FIELD BLANK	TRIP BLANK	----	----
					Client sampling date / time	01-Mar-2023 11:32	01-Mar-2023 15:15	01-Mar-2023	----	----
Analyte	CAS Number	Method	LOR	Unit		WP2302565-016	WP2302565-017	WP2302565-018	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.13	<0.050	<0.050	----	----
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.34	<0.050	<0.050	----	----
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0150	<0.00020	<0.00020	----	----
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	<0.50	----	----
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00036	<0.00030	<0.00030	----	----
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000022	<0.000010	<0.000010	----	----
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0014	0.0013	<0.0010	----	----
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	----	----
Dissolved MeHg filtration location	----	EP537	-	-		Field	Field	Field	----	----
Dissolved mercury filtration location	----	EP509-L	-	-		Field	Field	Field	----	----
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Laboratory	----	----
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	µg/L		0.000064	<0.000020	<0.000020	----	----
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	µg/L		0.000036	0.000040 RRV	<0.000020	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WP2302565**	Page	: 1 of 59
Amendment	: 1		
Client	: **Alamos Gold Inc.**	Laboratory	: Winnipeg - Environmental
Contact	: Karen Mathers	Account Manager	: Judy Dalmaijer
Address	: C/O Stantec Consulting 500 - 311 Portage Avenue Winnipeg MB Canada R3B 2B9	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	: 416 368 9932	Telephone	: +1 204 255 9720
Project	: ----	Date Samples Received	: 06-Mar-2023 13:10
PO	: ----	Issue Date	: 06-Apr-2023 13:43
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: ALAMOS Gold Inc. - (Q88846)_V2		
No. of samples received	: 18		
No. of samples analysed	: 18		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Matrix Spike (MS) Recoveries								
Dissolved Metals	Anonymous	Anonymous	Selenium, dissolved	7782-49-2	E421	132 % MES	70.0-130%	Recovery greater than upper data quality objective

Result Qualifiers

Qualifier	*Description*
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF40	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF41	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF43	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF44	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF45	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) FIELD BLANK	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) TRIP BLANK	E303	01-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF38	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF42	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF46	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF7D	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM28	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM29C	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM71	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM72	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM73	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) QC-01	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF7S	E303	28-Feb-2023	06-Mar-2023	----	----		06-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF40	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF41	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF43	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF44	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF45	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE FIELD BLANK	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE TRIP BLANK	E235.Br	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF38	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF42	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF46	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF7D	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF7S	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM28	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM29C	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM71	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM72	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM73	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE QC-01	E235.Br	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF40	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF41	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF43	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF44	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF45	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE FIELD BLANK	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE TRIP BLANK	E235.Cl	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF38	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF42	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF46	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF7D	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQF7S	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQM28	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQM29C	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQM71	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE AQM72	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE AQM73	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE QC-01	E235.Cl	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF40	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF41	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF43	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF44	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF45	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE FIELD BLANK	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TRIP BLANK	E235.F	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF38	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF42	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF46	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF7D	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF7S	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM28	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM29C	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM71	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM72	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM73	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE QC-01	E235.F	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF40	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF41	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF43	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF44	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF45	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE FIELD BLANK	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE TRIP BLANK	E235.NO3	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF38	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF42	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF46	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF7D	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF7S	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM28	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM29C	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM71	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM72	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM73	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE QC-01	E235.NO3	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF40	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF41	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF43	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF44	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF45	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE FIELD BLANK	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE TRIP BLANK	E235.NO2	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	7 days	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF38	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF42	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF46	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF7D	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF7S	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM28	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM29C	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM71	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM72	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	× EHTR-FM

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM73	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	✖ EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE QC-01	E235.NO2	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	3 days	8 days	✖ EHTR-FM
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF40	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF41	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF43	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF44	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF45	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE FIELD BLANK	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE TRIP BLANK	E235.SO4	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF38	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF42	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF46	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF7D	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF7S	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM28	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM29C	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM71	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM72	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM73	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE QC-01	E235.SO4	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF40	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF41	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF43	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF44	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF45	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) FIELD BLANK	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) TRIP BLANK	E319	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF38	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF42	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF46	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF7D	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF7S	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM28	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM29C	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM71	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM72	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM73	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) QC-01	E319	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF40	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF41	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF43	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF44	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF45	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) FIELD BLANK	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) TRIP BLANK	E372	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF38	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF42	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF46	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF7D	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF7S	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQM28	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQM29C	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQM71	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQM72	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQM73	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) QC-01	E372	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF38	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF42	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF46	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF7D	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF7S	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM28	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM29C	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM71	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM72	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM73	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) QC-01	E339	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF40	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF41	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF43	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF44	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF45	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
FIELD BLANK	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TRIP BLANK	E339	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF38	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF42	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF46	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF7D	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF7S	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM28	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM29C	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM71	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM72	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM73	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) QC-01	E333	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF40	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF41	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF43	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF44	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF45	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
FIELD BLANK	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TRIP BLANK	E333	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF38	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF42	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF46	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF7D	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF7S	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM28	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM29C	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM71	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM72	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM73	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) QC-01	E336	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	10 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF40	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF41	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF43	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF44	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF45	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
FIELD BLANK	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
TRIP BLANK	E336	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	14 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF38	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF42	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF46	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF7D	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQM28	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQM29C	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQM71	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQM72	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQM73	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
QC-01	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF7S	E509-L	28-Feb-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	11 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF40	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF41	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF43	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF44	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)										
AQF45	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) FIELD BLANK	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) TRIP BLANK	E509-L	01-Mar-2023	10-Mar-2023	----	----		10-Mar-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF40	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF41	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF43	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF44	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF45	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) FIELD BLANK	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) TRIP BLANK	E421	01-Mar-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF38	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF42	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF46	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF7D	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF7S	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM28	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM29C	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM71	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM72	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM73	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) QC-01	E421	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF38	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF40	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF41	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF43	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF44	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF45	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF7D	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF7S	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM28	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM29C	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM71	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM72	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM73	E358-L	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) FIELD BLANK	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TRIP BLANK	E358-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF42	E358-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF46	E358-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) QC-01	E358-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) FIELD BLANK	E355-L	01-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	28 days	12 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TRIP BLANK	E355-L	01-Mar-2023	13-Mar-2023	----	----		13-Mar-2023	28 days	12 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF40	E355-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF41	E355-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF43	E355-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF44	E355-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF45	E355-L	01-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF38	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF42	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF46	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF7D	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF7S	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM28	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM29C	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM71	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM72	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM73	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) QC-01	E355-L	28-Feb-2023	08-Mar-2023	----	----		08-Mar-2023	28 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF40	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF41	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF43	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF44	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF45	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE FIELD BLANK	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE TRIP BLANK	E283	01-Mar-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE AQF38	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF42	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF46	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF7D	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM28	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM29C	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM71	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM72	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM73	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE QC-01	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF7S	E283	28-Feb-2023	08-Mar-2023	----	----		14-Mar-2023	14 days	15 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF40	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF41	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF43	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF44	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF45	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE FIELD BLANK	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TRIP BLANK	E290	01-Mar-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE AQF38	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF42	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF46	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF7D	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF7S	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM28	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM29C	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM71	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM72	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE AQM73	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE QC-01	E290	28-Feb-2023	07-Mar-2023	----	----		07-Mar-2023	14 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF40	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF41	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF43	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF44	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF45	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] FIELD BLANK	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] TRIP BLANK	E160-L	01-Mar-2023	----	----	----		07-Mar-2023	7 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF38	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF42	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF46	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF7D	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF7S	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM28	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM29C	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM71	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM72	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB]										
AQM73	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB]										
QC-01	E160-L	28-Feb-2023	----	----	----		07-Mar-2023	7 days	7 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQF38	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQF7D	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQF7S	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQM28	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQM29C	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQM71	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQM72	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQM73	E537	28-Feb-2023	16-Mar-2023	180 days	16 days	✓	16-Mar-2023	180 days	0 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQF40	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQF41	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQF43	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQF44	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQF45	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
FIELD BLANK	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
TRIP BLANK	E537	01-Mar-2023	17-Mar-2023	180 days	16 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
AQF42	E537	28-Feb-2023	17-Mar-2023	180 days	17 days	✓	21-Mar-2023	180 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) AQF46	E537	28-Feb-2023	17-Mar-2023	180 days	17 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) QC-01	E537	28-Feb-2023	17-Mar-2023	180 days	17 days	✓	21-Mar-2023	180 days	4 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF40	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF41	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF43	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF44	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF45	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) FIELD BLANK	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) TRIP BLANK	E532	01-Mar-2023	----	----	----		09-Mar-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF38	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF42	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF46	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF7D	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF7S	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM28	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM29C	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM71	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM72	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM73	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) QC-01	E532	28-Feb-2023	----	----	----		09-Mar-2023	28 days	9 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF40	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF41	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF43	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF44	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF45	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) FIELD BLANK	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) TRIP BLANK	E536	01-Mar-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF38	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF42	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF46	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF7D	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQM28	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQM29C	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQM71	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQM72	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQM73	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) QC-01	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	11 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) AQF7S	E536	28-Feb-2023	11-Mar-2023	----	----		11-Mar-2023	180 days	12 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF38	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF42	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF46	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF7D	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF7S	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQM28	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQM29C	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQM71	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQM72	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQM73	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) QC-01	E508-L	28-Feb-2023	10-Mar-2023	28 days	10 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF40	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF41	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF43	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF44	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) AQF45	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
FIELD BLANK	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
TRIP BLANK	E508-L	01-Mar-2023	10-Mar-2023	28 days	9 days	✓	10-Mar-2023	28 days	0 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
AQF40	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
AQF41	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
AQF43	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
AQF44	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
AQF45	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
AQM28	E420	28-Feb-2023	07-Mar-2023	----	----		08-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
FIELD BLANK	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) TRIP BLANK	E420	01-Mar-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF38	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF42	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF46	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF7D	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF7S	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM29C	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM71	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM72	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM73	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) QC-01	E420	28-Feb-2023	08-Mar-2023	----	----		09-Mar-2023	180 days	9 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	856311	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	853851	1	20	5.0	5.0	✓
Ammonia in Water by Colour	E303	853867	1	18	5.5	5.0	✓
Bromide in Water by IC	E235.Br	854724	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	854722	2	26	7.6	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	859431	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	854521	1	20	5.0	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	862432	2	33	6.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	854523	2	32	6.2	5.0	✓
Fluoride in Water by IC	E235.F	854723	2	29	6.9	5.0	✓
Free Cyanide	E339	859043	2	30	6.6	5.0	✓
Nitrate in Water by IC	E235.NO3	854719	2	37	5.4	5.0	✓
Nitrite in Water by IC	E235.NO2	854720	2	37	5.4	5.0	✓
Sulfate in Water by IC	E235.SO4	854721	2	28	7.1	5.0	✓
Total Cyanide	E333	859041	2	33	6.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	857259	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	854740	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	859213	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	854517	2	40	5.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	858920	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	855745	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	854707	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	855079	1	19	5.2	5.0	✓
WAD Cyanide	E336	859044	2	22	9.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	856311	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	853851	1	20	5.0	5.0	✓
Ammonia in Water by Colour	E303	853867	1	18	5.5	5.0	✓
Bromide in Water by IC	E235.Br	854724	2	20	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	854722	2	26	7.6	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	859431	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	854521	1	20	5.0	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	862432	3	33	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	854523	2	32	6.2	5.0	✓
Fluoride in Water by IC	E235.F	854723	2	29	6.9	5.0	✓
Free Cyanide	E339	859043	2	30	6.6	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Nitrate in Water by IC	E235.NO3	854719	2	37	5.4	5.0	✓
Nitrite in Water by IC	E235.NO2	854720	2	37	5.4	5.0	✓
Sulfate in Water by IC	E235.SO4	854721	2	28	7.1	5.0	✓
Total Cyanide	E333	859041	2	33	6.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	857259	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	854740	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	859213	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	854517	2	40	5.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	858920	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	855745	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	854707	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	855079	1	19	5.2	5.0	✓
WAD Cyanide	E336	859044	2	22	9.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	856311	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	853851	1	20	5.0	5.0	✓
Ammonia in Water by Colour	E303	853867	1	18	5.5	5.0	✓
Bromide in Water by IC	E235.Br	854724	2	20	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	854722	2	26	7.6	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	859431	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	854521	1	20	5.0	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	862432	3	33	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	854523	2	32	6.2	5.0	✓
Fluoride in Water by IC	E235.F	854723	2	29	6.9	5.0	✓
Free Cyanide	E339	859043	2	30	6.6	5.0	✓
Nitrate in Water by IC	E235.NO3	854719	2	37	5.4	5.0	✓
Nitrite in Water by IC	E235.NO2	854720	2	37	5.4	5.0	✓
Sulfate in Water by IC	E235.SO4	854721	2	28	7.1	5.0	✓
Total Cyanide	E333	859041	2	33	6.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	857259	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	854740	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	859213	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	854517	2	40	5.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	858920	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	855745	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	854707	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	855079	1	19	5.2	5.0	✓
WAD Cyanide	E336	859044	2	22	9.0	5.0	✓
Matrix Spikes (MS)							

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Ammonia in Water by Colour	E303	853867	1	18	5.5	5.0	✓
Bromide in Water by IC	E235.Br	854724	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	854722	2	26	7.6	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	859431	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	854521	1	20	5.0	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	862432	2	33	6.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	854523	2	32	6.2	5.0	✓
Fluoride in Water by IC	E235.F	854723	2	29	6.9	5.0	✓
Free Cyanide	E339	859043	2	30	6.6	5.0	✓
Nitrate in Water by IC	E235.NO3	854719	2	37	5.4	5.0	✓
Nitrite in Water by IC	E235.NO2	854720	2	37	5.4	5.0	✓
Sulfate in Water by IC	E235.SO4	854721	2	28	7.1	5.0	✓
Total Cyanide	E333	859041	2	33	6.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	857259	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	854740	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	859213	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	854517	2	40	5.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	858920	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	855745	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	854707	1	20	5.0	5.0	✓
WAD Cyanide	E336	859044	2	22	9.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry (Low Level)	E160-L Winnipeg - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Bromide in Water by IC	E235.Br Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Waterloo - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
Alkalinity Species by Titration	E290 Winnipeg - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia in Water by Colour	E303 Winnipeg - Environmental	Water	APHA 4500 NH3-NITROGEN (AMMONIA)	This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.
Total Kjeldahl Nitrogen by Colourimetry	E319 Winnipeg - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by colourimetric analysis.
Total Cyanide	E333 Waterloo - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Waterloo - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Free Cyanide	E339 Waterloo - Environmental	Water	ASTM D7237 (mod)	Free Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line gas diffusion followed by colourmetric analysis.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Winnipeg - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Winnipeg - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.02 mg/L)	E372 Winnipeg - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total metals in Water by CRC ICPMS	E420 Winnipeg - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Winnipeg - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Total Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection. Results are based on an un-filtered, field-preserved sample.
Total Methylmercury in Water by GCAFS	E536 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury in Water by GCAFS	E537 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Hardness (Calculated) from Total Ca/Mg	EC100A Winnipeg - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), from total Ca/Mg” is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Winnipeg - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Winnipeg - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by Combustion	EP355 Winnipeg - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Winnipeg - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Winnipeg - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Winnipeg - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration (Low Level)	EP509-L Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Total Methylmercury Water Preparation	EP536 Vancouver - Environmental	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury Water Preparation	EP537 Vancouver - Environmental	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".

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QUALITY CONTROL REPORT

Work Order	: **WP2302565**	Page	: 1 of 26
Amendment	: **1**		
Client	: Alamos Gold Inc.	Laboratory	: Winnipeg - Environmental
Contact	: Karen Mathers	Account Manager	: Judy Dalmaijer
Address	: C/O Stantec Consulting 500 - 311 Portage Avenue Winnipeg MB Canada R3B 2B9	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	:	Telephone	: +1 204 255 9720
Project	: ----	Date Samples Received	: 06-Mar-2023 13:10
PO	: ----	Date Analysis Commenced	: 06-Mar-2023
C-O-C number	: ----	Issue Date	: 06-Apr-2023 13:43
Sampler	: ---- 416 368 9932		
Site	: ----		
Quote number	: ALAMOS Gold Inc. - (Q88846)_V2		
No. of samples received	: 18		
No. of samples analysed	: 18		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Christine Mason	Department Manager - Chemistry	Winnipeg Inorganics, Winnipeg, Manitoba
Christine Mason	Department Manager - Chemistry	Winnipeg Metals, Winnipeg, Manitoba
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Metals, Waterloo, Ontario
Jayden Piattelli	Analyst	Vancouver Metals, Burnaby, British Columbia
Jon Fisher	Production Manager, Environmental	Waterloo Inorganics, Waterloo, Ontario
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Lee McTavish		Winnipeg Inorganics, Winnipeg, Manitoba
Matthew Bouch		Winnipeg Metals, Winnipeg, Manitoba
Oleksandr Busel		Winnipeg Inorganics, Winnipeg, Manitoba
Parnian Sane	Analyst	Vancouver Metals, Burnaby, British Columbia
Zandrea Grabinski		Winnipeg Inorganics, Winnipeg, Manitoba

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 853851)											
WP2302559-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	21.2	18.7	12.5%	20%	----
Physical Tests (QC Lot: 855079)											
WP2302636-001	Anonymous	Solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.3	2.5	0.3	Diff <2x LOR	----
Physical Tests (QC Lot: 856311)											
WP2302565-001	AQM28	Acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 853867)											
WP2302565-001	AQM28	Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L	0.040	0.039	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854707)											
WP2302565-001	AQM28	Phosphorus, total	7723-14-0	E372	0.020	mg/L	0.023	0.022	0.0009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854719)											
WP2302565-001	AQM28	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	0.138	0.140	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854720)											
WP2302565-001	AQM28	Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854721)											
WP2302565-001	AQM28	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	8.48	8.53	0.502%	20%	----
Anions and Nutrients (QC Lot: 854722)											
WP2302565-001	AQM28	Chloride	16887-00-6	E235.Cl	0.50	mg/L	1.09	1.09	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854723)											
WP2302565-001	AQM28	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.060	0.060	0.0007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854724)											
WP2302565-001	AQM28	Bromide	24959-67-9	E235.Br	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854740)											
WP2302565-001	AQM28	Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	0.43	0.42	0.01	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854990)											
WP2302586-003	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	5.89	5.93	0.642%	20%	----
Anions and Nutrients (QC Lot: 854991)											
WP2302586-003	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.389	0.390	0.370%	20%	----
Anions and Nutrients (QC Lot: 854992)											
WP2302586-003	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854993)											

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Anions and Nutrients (QC Lot: 854993) - continued											
WP2302586-003	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 854994)											
WP2302586-003	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	72.5	72.6	0.137%	20%	----
Cyanides (QC Lot: 859041)											
WP2302565-001	AQM28	Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 859043)											
WP2302565-001	AQM28	Cyanide, free	----	E339	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 859044)											
WP2302565-001	AQM28	Cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 859047)											
WP2302565-018	TRIP BLANK	Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 859048)											
WP2302565-018	TRIP BLANK	Cyanide, free	----	E339	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 859049)											
WP2302565-018	TRIP BLANK	Cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 854523)											
WP2302368-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	13.4	14.2	5.62%	20%	----
Organic / Inorganic Carbon (QC Lot: 855745)											
WP2302453-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.59	<0.50	0.09	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 855747)											
WP2302565-009	AQF46	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	13.4	13.4	0.252%	20%	----
Organic / Inorganic Carbon (QC Lot: 861079)											
WP2302815-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	15.2	15.8	3.82%	20%	----
Total Metals (QC Lot: 854517)											
WP2302454-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0043	0.0013	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0159	0.0157	1.21%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.076	0.074	0.002	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	19.0	18.9	0.854%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 854517) - continued											
WP2302454-001	Anonymous	Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0203	0.0205	1.12%	20%	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	25.0	24.1	3.74%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00014	0.00015	0.00001	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000360	0.000374	0.000014	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	1.81	1.80	0.952%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00082	0.00078	0.00004	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000669	0.000661	1.16%	20%	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	2.28	2.28	0.214%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	26.4	25.3	4.00%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.130	0.129	0.359%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	6.40	6.76	5.38%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.00276	0.00286	3.40%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 855816)											
WP2302552-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00024	0.00022	0.00002	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00268	0.00272	1.46%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 855816) - continued											
WP2302552-001	Anonymous	Barium, total	7440-39-3	E420	0.00010	mg/L	0.0137	0.0134	2.05%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	0.000030	0.000025	0.000006	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.875	0.916	4.57%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000276	0.0000241	0.0000035	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	81.8	83.9	2.56%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000015	0.000018	0.000002	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00107	0.00110	2.82%	20%	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00203	0.00202	0.000006	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.044	0.043	0.001	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000128	0.000128	0.0000006	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.189	0.190	0.561%	20%	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	25.6	26.1	2.10%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	1.84	1.86	1.23%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00444	0.00445	0.255%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00253	0.00256	0.00003	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	0.390	0.386	0.004	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	7.72	7.62	1.23%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00414	0.00420	1.46%	20%	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.00153	0.00155	1.23%	20%	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	13.9	14.3	2.73%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	227	227	0.246%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.709	0.679	4.38%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	153	157	2.79%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	0.000016	0.000017	0.0000008	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.00154	0.00158	2.93%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00052	<0.00050	0.00002	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 855816) - continued											
WP2302552-001	Anonymous	Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0150	0.0146	0.0004	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 859213)											
WP2302565-001	AQM28	Mercury, total	7439-97-6	E508-L	0.50	ng/L	1.34	1.25	0.09	Diff <2x LOR	----
Dissolved Metals (QC Lot: 854521)											
WP2302559-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0768	0.0740	3.78%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00963	0.00968	0.524%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.191	0.190	0.563%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.114	0.116	1.86%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	0.000071	0.000071	0.00000001	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.419	0.402	4.23%	20%	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0573	0.0583	1.75%	20%	----
		Calcium, dissolved	7440-70-2	E421	0.500	mg/L	686	660	4.00%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.00108	0.00108	0.508%	20%	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	9.93	9.93	0.00317%	20%	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	2.01	1.98	1.28%	20%	----
		Iron, dissolved	7439-89-6	E421	0.100	mg/L	553	550	0.654%	20%	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.355	0.310	13.6%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0500	mg/L	422	412	2.28%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00100	mg/L	36.9	36.7	0.710%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00717	0.00713	0.566%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00500	mg/L	32.8	32.1	2.26%	20%	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	110	105	4.47%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.112	0.109	2.72%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.0210	0.0216	2.92%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	34.1	33.2	2.68%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000016	0.000015	0.0000006	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	394	397	0.879%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	2.57	2.62	2.05%	20%	----
		Sulfur, dissolved	7704-34-9	E421	5.00	mg/L	1540	1520	0.957%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 854521) - continued											
WP2302559-001	Anonymous	Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000036	0.000035	0.0000006	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	0.00018	<0.00010	0.00008	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000214	0.000214	0.126%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0100	mg/L	16.3	16.0	1.38%	20%	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 859431)											
WP2302565-001	AQM28	Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	1.46	1.40	0.06	Diff <2x LOR	----
Speciated Metals (QC Lot: 857259)											
WP2302565-001	AQM28	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 858920)											
WP2302565-001	AQM28	Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	µg/L	0.000074	0.000085	0.000010	Diff <2x LOR	----
Speciated Metals (QC Lot: 862432)											
VA23A3446-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000800	µg/L	0.00154	0.00111	0.000427	Diff <2x LOR	----
Speciated Metals (QC Lot: 876269)											
FC2300559-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	µg/L	0.000074	0.000091	0.000017	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 853851)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 855079)						
Solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 856311)						
Acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Anions and Nutrients (QCLot: 853867)						
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 854707)						
Phosphorus, total	7723-14-0	E372	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 854719)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 854720)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 854721)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 854722)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 854723)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 854724)						
Bromide	24959-67-9	E235.Br	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 854740)						
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	<0.15	----
Anions and Nutrients (QCLot: 854989)						
Bromide	24959-67-9	E235.Br	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 854990)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 854991)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 854992)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 854993)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 854993) - continued						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 854994)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Cyanides (QCLot: 859041)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 859043)						
Cyanide, free	----	E339	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 859044)						
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 859047)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 859048)						
Cyanide, free	----	E339	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 859049)						
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 854523)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 855745)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 855747)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 861079)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 854517)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 854517) - continued						
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 855816)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 855816) - continued						
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 859213)						
Mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 854521)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 854521) - continued						
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 859431)						
Mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	<0.50	----
Speciated Metals (QCLot: 857259)						
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----
Speciated Metals (QCLot: 858920)						
Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	µg/L	<0.000020	----
Speciated Metals (QCLot: 862432)						
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	µg/L	<0.000020	----
Speciated Metals (QCLot: 866122)						
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	µg/L	<0.000020	----
Speciated Metals (QCLot: 876269)						
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	µg/L	<0.000020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 853851)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	100 mg/L	98.1	85.0	115	----
Physical Tests (QCLot: 855079)									
Solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	97.0	85.0	115	----
Physical Tests (QCLot: 856311)									
Acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	112	85.0	115	----
Anions and Nutrients (QCLot: 853867)									
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	0.25 mg/L	98.5	85.0	115	----
Anions and Nutrients (QCLot: 854707)									
Phosphorus, total	7723-14-0	E372	0.02	mg/L	0.5 mg/L	101	80.0	120	----
Anions and Nutrients (QCLot: 854719)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 854720)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	98.7	90.0	110	----
Anions and Nutrients (QCLot: 854721)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 854722)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	98.5	90.0	110	----
Anions and Nutrients (QCLot: 854723)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 854724)									
Bromide	24959-67-9	E235.Br	0.1	mg/L	0.5 mg/L	100	85.0	115	----
Anions and Nutrients (QCLot: 854740)									
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	4 mg/L	99.7	75.0	125	----
Anions and Nutrients (QCLot: 854989)									
Bromide	24959-67-9	E235.Br	0.1	mg/L	0.5 mg/L	98.7	85.0	115	----
Anions and Nutrients (QCLot: 854990)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	98.0	90.0	110	----
Anions and Nutrients (QCLot: 854991)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 854992)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	97.3	90.0	110	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 854993)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	99.0	90.0	110	----
Anions and Nutrients (QCLot: 854994)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Cyanides (QCLot: 859041)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	106	80.0	120	----
Cyanides (QCLot: 859043)									
Cyanide, free	----	E339	0.002	mg/L	0.125 mg/L	96.5	80.0	120	----
Cyanides (QCLot: 859044)									
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	99.9	80.0	120	----
Cyanides (QCLot: 859047)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	108	80.0	120	----
Cyanides (QCLot: 859048)									
Cyanide, free	----	E339	0.002	mg/L	0.125 mg/L	93.8	80.0	120	----
Cyanides (QCLot: 859049)									
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	97.3	80.0	120	----
Organic / Inorganic Carbon (QCLot: 854523)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	96.3	80.0	120	----
Organic / Inorganic Carbon (QCLot: 855745)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 855747)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	97.9	80.0	120	----
Organic / Inorganic Carbon (QCLot: 861079)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	94.9	80.0	120	----
Total Metals (QCLot: 854517)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	93.4	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.1	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	94.6	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	93.8	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	89.3	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 854517) - continued									
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	91.0	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	90.3	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	91.9	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	92.1	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	89.8	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	95.4	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.3	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	92.4	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	90.0	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	102	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	92.2	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	97.9	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	86.0	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	93.0	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	95.5	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	114	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	94.0	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	94.3	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	88.8	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.4	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	98.1	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	94.4	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	92.8	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	92.5	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	93.3	80.0	120	----
Total Metals (QCLot: 855816)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	94.7	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	95.1	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	92.8	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 855816) - continued									
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	95.0	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.8	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	95.1	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	90.8	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	95.4	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	95.2	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	94.6	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	95.6	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	93.3	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	93.1	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	91.8	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	93.3	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	107	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	97.9	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	99.5	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	89.2	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	97.6	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	96.8	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	103	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	93.8	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	90.6	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	94.3	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	95.4	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	95.3	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.9	80.0	120	----
Total Metals (QCLot: 859213)									
Mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	95.9	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 854521)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	95.9	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.5	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	93.1	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.6	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.3	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.5	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	93.2	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	91.3	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	90.1	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	91.2	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	91.8	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	91.0	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	85.1	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.4	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	92.2	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	94.0	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.7	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	91.3	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	99.8	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	89.1	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	98.1	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.4	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.1	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	83.4	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	91.3	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	93.2	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.2	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	95.8	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	95.2	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	92.6	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.4	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.4	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	100	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 854521) - continued									
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.0	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	92.5	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	92.8	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	92.6	80.0	120	----
Mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	95.9	80.0	120	----
Speciated Metals (QCLot: 857259)									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.025 mg/L	98.6	80.0	120	----
Speciated Metals (QCLot: 858920)									
Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	µg/L	0.0025 µg/L	79.6	70.0	130	----
Speciated Metals (QCLot: 862432)									
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	µg/L	0.0025 µg/L	84.9	70.0	130	----
Speciated Metals (QCLot: 866122)									
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	µg/L	0.0025 µg/L	82.6	70.0	130	----
Speciated Metals (QCLot: 876269)									
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	µg/L	0.0025 µg/L	74.5	70.0	130	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 853867)										
WP2302565-001	AQM28	Ammonia, total (as N)	7664-41-7	E303	0.230 mg/L	0.25 mg/L	91.9	75.0	125	----
Anions and Nutrients (QCLot: 854707)										
WP2302565-002	AQM29C	Phosphorus, total	7723-14-0	E372	0.246 mg/L	0.25 mg/L	98.2	70.0	130	----
Anions and Nutrients (QCLot: 854719)										
WP2302565-001	AQM28	Nitrate (as N)	14797-55-8	E235.NO3	2.56 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 854720)										
WP2302565-001	AQM28	Nitrite (as N)	14797-65-0	E235.NO2	0.500 mg/L	0.5 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 854721)										
WP2302565-001	AQM28	Sulfate (as SO4)	14808-79-8	E235.SO4	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 854722)										
WP2302565-001	AQM28	Chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 854723)										
WP2302565-001	AQM28	Fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 854724)										
WP2302565-001	AQM28	Bromide	24959-67-9	E235.Br	0.51 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 854740)										
WP2302565-001	AQM28	Kjeldahl nitrogen, total [TKN]	----	E319	4.70 mg/L	5 mg/L	93.9	70.0	130	----
Anions and Nutrients (QCLot: 854990)										
WP2302586-003	Anonymous	Chloride	16887-00-6	E235.Cl	99.9 mg/L	100 mg/L	99.9	75.0	125	----
Anions and Nutrients (QCLot: 854991)										
WP2302586-003	Anonymous	Fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 854992)										
WP2302586-003	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.493 mg/L	0.5 mg/L	98.5	75.0	125	----
Anions and Nutrients (QCLot: 854993)										
WP2302586-003	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	2.52 mg/L	2.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 854994)										
WP2302586-003	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	99.3 mg/L	100 mg/L	99.3	75.0	125	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 859041)										
WP2302565-001	AQM28	Cyanide, strong acid dissociable (Total)	----	E333	0.259 mg/L	0.25 mg/L	104	75.0	125	----
Cyanides (QCLot: 859043)										
WP2302565-001	AQM28	Cyanide, free	----	E339	0.130 mg/L	0.125 mg/L	104	75.0	125	----
Cyanides (QCLot: 859044)										
WP2302565-001	AQM28	Cyanide, weak acid dissociable	----	E336	0.134 mg/L	0.125 mg/L	107	75.0	125	----
Cyanides (QCLot: 859047)										
WP2302565-018	TRIP BLANK	Cyanide, strong acid dissociable (Total)	----	E333	0.278 mg/L	0.25 mg/L	111	75.0	125	----
Cyanides (QCLot: 859048)										
WP2302565-018	TRIP BLANK	Cyanide, free	----	E339	0.129 mg/L	0.125 mg/L	103	75.0	125	----
Cyanides (QCLot: 859049)										
WP2302565-018	TRIP BLANK	Cyanide, weak acid dissociable	----	E336	0.133 mg/L	0.125 mg/L	106	75.0	125	----
Organic / Inorganic Carbon (QCLot: 854523)										
WP2302368-002	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 855745)										
WP2302454-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	4.53 mg/L	5 mg/L	90.7	70.0	130	----
Organic / Inorganic Carbon (QCLot: 855747)										
WP2302565-010	AQF42	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 861079)										
WP2302815-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	ND mg/L	5 mg/L	ND	70.0	130	----
Total Metals (QCLot: 854517)										
WP2302454-001	Anonymous	Aluminum, total	7429-90-5	E420	0.218 mg/L	0.2 mg/L	109	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0234 mg/L	0.02 mg/L	117	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0224 mg/L	0.02 mg/L	112	70.0	130	----
		Barium, total	7440-39-3	E420	0.0225 mg/L	0.02 mg/L	113	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0111 mg/L	0.01 mg/L	111	70.0	130	----
		Boron, total	7440-42-8	E420	0.071 mg/L	0.1 mg/L	70.8	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00450 mg/L	0.004 mg/L	112	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0109 mg/L	0.01 mg/L	109	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0436 mg/L	0.04 mg/L	109	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0213 mg/L	0.02 mg/L	107	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 854517) - continued										
WP2302454-001	Anonymous	Copper, total	7440-50-8	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		Iron, total	7439-89-6	E420	2.17 mg/L	2 mg/L	108	70.0	130	----
		Lead, total	7439-92-1	E420	0.0211 mg/L	0.02 mg/L	105	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0802 mg/L	0.1 mg/L	80.2	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0217 mg/L	0.02 mg/L	109	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0232 mg/L	0.02 mg/L	116	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		Phosphorus, total	7723-14-0	E420	11.2 mg/L	10 mg/L	112	70.0	130	----
		Potassium, total	7440-09-7	E420	4.32 mg/L	4 mg/L	108	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0220 mg/L	0.02 mg/L	110	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0443 mg/L	0.04 mg/L	111	70.0	130	----
		Silicon, total	7440-21-3	E420	11.3 mg/L	10 mg/L	113	70.0	130	----
		Silver, total	7440-22-4	E420	0.00436 mg/L	0.004 mg/L	109	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	23.0 mg/L	20 mg/L	115	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0458 mg/L	0.04 mg/L	114	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00420 mg/L	0.004 mg/L	105	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0223 mg/L	0.02 mg/L	112	70.0	130	----
		Tin, total	7440-31-5	E420	0.0230 mg/L	0.02 mg/L	115	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0467 mg/L	0.04 mg/L	117	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0233 mg/L	0.02 mg/L	117	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00426 mg/L	0.004 mg/L	106	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.112 mg/L	0.1 mg/L	112	70.0	130	----
		Zinc, total	7440-66-6	E420	0.438 mg/L	0.4 mg/L	109	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0472 mg/L	0.04 mg/L	118	70.0	130	----
Total Metals (QCLot: 855816)										
WP2302552-001	Anonymous	Aluminum, total	7429-90-5	E420	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Barium, total	7440-39-3	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00990 mg/L	0.01 mg/L	99.0	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 855816) - continued										
WP2302552-001	Anonymous	Cadmium, total	7440-43-9	E420	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0100 mg/L	0.01 mg/L	100	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		Copper, total	7440-50-8	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		Iron, total	7439-89-6	E420	2.03 mg/L	2 mg/L	102	70.0	130	----
		Lead, total	7439-92-1	E420	0.0184 mg/L	0.02 mg/L	92.3	70.0	130	----
		Lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0386 mg/L	0.04 mg/L	96.5	70.0	130	----
		Phosphorus, total	7723-14-0	E420	10.9 mg/L	10 mg/L	109	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.00373 mg/L	0.004 mg/L	93.3	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		Tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00382 mg/L	0.004 mg/L	95.5	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		Zinc, total	7440-66-6	E420	0.390 mg/L	0.4 mg/L	97.6	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
Total Metals (QCLot: 859213)										
WP2302565-002	AQM29C	Mercury, total	7439-97-6	E508-L	5.49 ng/L	5 ng/L	110	70.0	130	----
Dissolved Metals (QCLot: 854521)										

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 854521) - continued										
WP2302559-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.186 mg/L	0.2 mg/L	92.8	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0346 mg/L	0.04 mg/L	86.6	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00848 mg/L	0.01 mg/L	84.8	70.0	130	----
		Boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00922 mg/L	0.01 mg/L	92.2	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0369 mg/L	0.04 mg/L	92.2	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Copper, dissolved	7440-50-8	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0172 mg/L	0.02 mg/L	85.9	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.0 mg/L	10 mg/L	100	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0529 mg/L	0.04 mg/L	132	70.0	130	MES
		Silicon, dissolved	7440-21-3	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00326 mg/L	0.004 mg/L	81.5	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00338 mg/L	0.004 mg/L	84.6	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 854521) - continued										
WP2302559-001	Anonymous	Uranium, dissolved	7440-61-1	E421	0.00355 mg/L	0.004 mg/L	88.7	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0990 mg/L	0.1 mg/L	99.0	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0438 mg/L	0.04 mg/L	109	70.0	130	----
Dissolved Metals (QCLot: 859431)										
WP2302565-002	AQM29C	Mercury, dissolved	7439-97-6	E509-L	4.83 ng/L	5 ng/L	96.7	70.0	130	----
Speciated Metals (QCLot: 857259)										
WP2302565-001	AQM28	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0389 mg/L	0.04 mg/L	97.4	70.0	130	----
Speciated Metals (QCLot: 858920)										
WP2302565-002	AQM29C	Methylmercury (as MeHg), total	22967-92-6	E536	0.00477 µg/L	0.0025 µg/L	95.4	60.0	140	----
Speciated Metals (QCLot: 862432)										
VA23A3446-002	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.0713 µg/L	0.0025 µg/L	71.3	60.0	140	----
Speciated Metals (QCLot: 876269)										
WP2302565-017	FIELD BLANK	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00169 µg/L	0.0025 µg/L	67.6	60.0	140	----

Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 2

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Environmental Division Winnipeg

Work Order Reference WP2302565

Telephone : +1 204 255 9720

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients	
Select Report Format:	☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Karen.Mathers@Stantec.com
Email 2	Brad.Horne@stantec.com
Email 3	Jeremy.Jackson@stantec.com

Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	

Turnaround Time (TAT) Requested
☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.
Additional fees may apply to rush requests on weekends, st
Date and Time Required for all E&P TATs:
For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q88846	AFE/Cost Center:	PO#
Job #:	ALAMOS	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: SD

Sampler: BB, AR

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	CN-T-L, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	HG-T-U-CVAF, HG-D-U-CVAG	MEHG-T-GCAF, MEHG-D-GCAF	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
1	AQM38	28-03-23	0949	W	13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
2	AQM39C		1033																		
3	AQM71		1105																		
4	AQM72		1139																		
5	AQM73		1215																		
6	AQF75		1403																		
7	AQF70		1441																		
8	AQF38		1505																		
9	AQF46		1533																		
10	AQF43		1606																		
11	QC-01		-																		
12	AQF45	01-03-23	0916																		

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	All dissolved bottles field filtered
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE RECEIPT DETAILS (ALS use only)								
Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED								
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO								
Cooler Custody Seals Intact: ☐ YES ☐ N/A	Sample Custody Seals Intact: ☐ YES ☐ N/A							
INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C				
				4.4				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: BLippert	Date: March 2 '23	Time: 0930	Received by:	Date: MAR 06 2023	Time: 1310	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

2565

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 2

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Karen.Mathers@Stantec.com

Email 2: Brad.Horne@stantec.com

Email 3: Jeremy.Jackson@stantec.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax:

Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	Q88846
Job #:	ALAMOS
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: DD

Sampler: BE, AR

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	CN-T-L, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	HG-T-U-CVAF, HG-D-U-CVAG	MEHG-T-GCAF, MEHG-D-GCAF	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
13	AQF44	01-03-23	0945	W	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
14	AQF43	"	1015	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
15	AQF40	"	1053	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
16	AQF41	"	1133	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
17	FIELD BLANK	"	1315	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
18	TRIP BLANK	-	-	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

All dissolved bottles field filtered

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				9.4			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
B Lynd	March 2/23	0930

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
	MAR 06 2023	1310

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **WP2303966**	Page	: 1 of 18
Client	: **Alamos Gold Inc.**	Laboratory	: Winnipeg - Environmental
Contact	: Karen Mathers	Account Manager	: Judy Dalmaijer
Address	: C/O Stantec Consulting 500 - 311 Portage Avenue Winnipeg MB Canada R3B 2B9	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg MB Canada R2J 3T4
Telephone	: 416 368 9932	Telephone	: +1 204 255 9720
Project	: ----	Date Samples Received	: 03-Apr-2023 11:20
PO	: ----	Date Analysis Commenced	: 03-Apr-2023
C-O-C number	: ----	Issue Date	: 11-Apr-2023 15:33
Sampler	: ----		
Site	: ----		
Quote number	: ALAMOS Gold Inc. - (Q88846)_V2		
No. of samples received	: 18		
No. of samples analysed	: 18		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Adrienne Tarr		Metals, Winnipeg, Manitoba
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario
Lee McTavish		Inorganics, Winnipeg, Manitoba
Lee McTavish		Metals, Winnipeg, Manitoba
Oleksandr Busel		Inorganics, Winnipeg, Manitoba
Oleksandr Busel		Metals, Winnipeg, Manitoba
Zandrea Grabinski		Inorganics, Winnipeg, Manitoba

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.
Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
mg/L	milligrams per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

SIF REQUESTED LOW RANGE MERCURY BUT THEY PROVIDED HIGH

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM28	AQM29C	AQM71	AQM72	AQM73
					Client sampling date / time	28-Mar-2023 09:30	28-Mar-2023 10:09	28-Mar-2023 10:47	28-Mar-2023 11:17	28-Mar-2023 11:54
						WP2303966-001	WP2303966-002	WP2303966-003	WP2303966-004	WP2303966-005
						Result	Result	Result	Result	Result
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		6.3	<2.0	21.9	21.6	43.8
Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L		13.8	16.3	91.8	27.5	30.6
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		16.8	19.9	112	33.6	37.3
Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		13.8	16.3	91.8	27.5	30.6
Hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L		24.8	13.5	94.8	29.0	43.1
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		1.8	4.1	3.6	10.7	14.4
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		0.076	0.027	0.364	0.711	0.214
Bromide	24959-67-9	E235.Br	0.10	mg/L		<5.00 DLM	<2.00 DLM	<0.10	<0.10	<0.10
Chloride	16887-00-6	E235.Cl-L	0.10	mg/L		<5.00 DLM	<2.00 DLM	3.18	0.36	0.34
Fluoride	16984-48-8	E235.F	0.020	mg/L		<1.00 DLM	<0.400 DLM	0.042	0.050	0.040
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.34	0.41	0.80	1.21	1.35
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		<1.00 DLM	<0.400 DLM	<0.020	0.026	<0.020
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.500 DLM	<0.200 DLM	<0.010	<0.010	<0.010
Phosphorus, total	7723-14-0	E372	0.020	mg/L		0.030	0.028	0.031	0.050	0.472
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		<15.0 DLM	<6.00 DLM	1.27	<0.30	<0.30
Cyanides										
Cyanide, free	----	E339	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L		0.0071	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		13.9	9.40	19.4	23.5	50.6
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		13.7	11.0	18.7	26.5	48.9
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.129	0.0607	0.0833	0.152	0.162

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM28	AQM29C	AQM71	AQM72	AQM73
					Client sampling date / time	28-Mar-2023 09:30	28-Mar-2023 10:09	28-Mar-2023 10:47	28-Mar-2023 11:17	28-Mar-2023 11:54
						WP2303966-001	WP2303966-002	WP2303966-003	WP2303966-004	WP2303966-005
						Result	Result	Result	Result	Result
Total Metals										
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	0.00021	<0.00010	0.00020	<0.00010
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00095	0.00036	0.00056	0.00075	0.00219
Barium, total	7440-39-3	E420	0.00010	mg/L		0.0111	0.00988	0.0184	0.0186	0.0163
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000210	0.0000100	0.0000060	0.0000067	0.0000270
Calcium, total	7440-70-2	E420	0.050	mg/L		7.31	3.72	30.0	8.85	12.9
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	0.000015	<0.000010	0.000038	0.000026
Chromium, total	7440-47-3	E420	0.00050	mg/L		0.00061	<0.00050	<0.00050	0.00081	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00042	0.00051	0.00076	0.00089	0.00248
Copper, total	7440-50-8	E420	0.00050	mg/L		0.00395	0.00102	<0.00050	<0.00050	<0.00050
Iron, total	7439-89-6	E420	0.010	mg/L		1.40	0.375	2.72	7.13	4.91
Lead, total	7439-92-1	E420	0.000050	mg/L		0.000112	0.000060	0.000069	0.000103	0.000181
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0012	0.0014	0.0016	0.0014	0.0018
Magnesium, total	7439-95-4	E420	0.0050	mg/L		1.60	1.03	4.82	1.69	2.65
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.0310	0.0548	0.390	0.382	0.966
Mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000090	0.000053	0.000128	<0.000050	0.000076
Nickel, total	7440-02-0	E420	0.00050	mg/L		0.0383	0.00482	0.00079	0.00078	0.00126
Phosphorus, total	7723-14-0	E420	0.050	mg/L		0.053	<0.050	<0.050	0.052	0.476
Potassium, total	7440-09-7	E420	0.050	mg/L		0.932	0.780	1.43	0.949	1.28
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00113	0.00138	0.00209	0.00158	0.00184
Selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon, total	7440-21-3	E420	0.10	mg/L		4.54	4.38	12.3	5.74	8.52
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		1.83	5.62	3.37	1.28	1.36
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0220	0.0167	0.0439	0.0244	0.0272
Sulfur, total	7704-34-9	E420	0.50	mg/L		2.67	0.61	0.59	<0.50	<0.50
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM28	AQM29C	AQM71	AQM72	AQM73
					Client sampling date / time	28-Mar-2023 09:30	28-Mar-2023 10:09	28-Mar-2023 10:47	28-Mar-2023 11:17	28-Mar-2023 11:54
						WP2303966-001	WP2303966-002	WP2303966-003	WP2303966-004	WP2303966-005
						Result	Result	Result	Result	Result
Total Metals										
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	0.000015
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6	E420	0.00030	mg/L		0.00212	0.00224	0.00281	0.00607	0.00383
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.000023	0.000028	0.000059	0.000024	0.000010
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	0.00077	0.00057
Zinc, total	7440-66-6	E420	0.0030	mg/L		0.0213	0.0089	0.0049	0.0100	0.0124
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	0.00024	<0.00020	0.00024
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0791	0.0141	0.0348	0.0639	0.128
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00093	0.00076 RRV	0.00059	0.00060	0.00214
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0107	0.00854	0.0176	0.0322 RRV	0.0166
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000188	0.0000067	<0.0000050	0.0000078	0.0000234
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		7.01	3.20	28.7	8.55	12.8
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	0.000011	0.000024
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00024	0.00057	0.00070	0.00082	0.00232
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00272	0.00064	0.00027	0.00186 RRV	0.00048
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.969	0.192	2.18	5.39	4.63
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000070	<0.000050	<0.000050	0.000129	0.000164
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0012	0.0013	0.0016	0.0014	0.0019
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		1.37	0.850	4.48	1.42	2.48
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0218	0.0908 RRV	0.358	0.332	0.891
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000074	<0.000050	0.000127	<0.000050	0.000070
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.0343	0.00430	0.00068	0.00067	0.00116

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM28	AQM29C	AQM71	AQM72	AQM73
					Client sampling date / time	28-Mar-2023 09:30	28-Mar-2023 10:09	28-Mar-2023 10:47	28-Mar-2023 11:17	28-Mar-2023 11:54
						WP2303966-001	WP2303966-002	WP2303966-003	WP2303966-004	WP2303966-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	0.400
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.830	0.658	1.31	0.860	1.21
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00100	0.00116	0.00186	0.00133	0.00171
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000058	0.000070	0.000067	0.000053	0.000115 RRV
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.11	3.61	11.0	5.09	7.72
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.72	1.34	3.29	1.23	1.31
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0212	0.0150	0.0439	0.0232	0.0276
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		2.14	0.52	0.60	<0.50	<0.50
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	0.000015
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00014	<0.00010
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00076	<0.00030	0.00111	0.00177	0.00267
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000020	0.000024	0.000053	0.000014	0.000011
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0131	0.0037	0.0026	0.0051	0.0115
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	0.00031
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		0.00061	0.00095	<0.00050	0.00076	<0.00050

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQF41	AQF45	AQF44	AQF43	QC01
					Client sampling date / time	28-Mar-2023 13:10	28-Mar-2023 13:45	28-Mar-2023 14:16	28-Mar-2023 14:39	28-Mar-2023
Analyte	CAS Number	Method	LOR	Unit		WP2303966-006	WP2303966-007	WP2303966-008	WP2303966-009	WP2303966-010
						Result	Result	Result	Result	Result
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	3.8	3.4	3.8	4.2
Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L		11.4	12.2	18.1	11.3	9.1
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		13.9	14.9	22.1	13.8	11.1
Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		11.4	12.2	18.1	11.3	9.1
Hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L		12.0	14.1	12.9	12.4	14.3
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		2.6	2.5	1.0	<1.0	5.0
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		0.014	0.051	0.013	0.011	0.032
Bromide	24959-67-9	E235.Br	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Chloride	16887-00-6	E235.Cl-L	0.10	mg/L		0.28	0.29	0.25	0.24	2.97
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.074	0.072	0.073	0.073	0.075
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.20	0.19	0.19	0.19	0.28
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.114	0.112	0.108	0.106	0.124
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus, total	7723-14-0	E372	0.020	mg/L		<0.020	<0.020	<0.020	<0.020	0.033
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		0.69	0.75	0.67	0.62	1.77
Cyanides										
Cyanide, free	----	E339	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		11.0	10.2	10.4	9.56	8.71
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		9.98	9.86	9.92	9.59	9.54
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0802	0.0488	0.0398	0.0360	0.0853
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	0.00130

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF41	AQF45	AQF44	AQF43	QC01
					Client sampling date / time	28-Mar-2023 13:10	28-Mar-2023 13:45	28-Mar-2023 14:16	28-Mar-2023 14:39	28-Mar-2023
						WP2303966-006	WP2303966-007	WP2303966-008	WP2303966-009	WP2303966-010
						Result	Result	Result	Result	Result
Total Metals										
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00028	0.00017	0.00016	0.00017	0.00054
Barium, total	7440-39-3	E420	0.00010	mg/L		0.00808	0.00705	0.00684	0.00674	0.0125
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	0.000108
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000194
Calcium, total	7440-70-2	E420	0.050	mg/L		3.24	3.82	3.47	3.38	3.94
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	0.00162
Copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	0.00129
Iron, total	7439-89-6	E420	0.010	mg/L		0.520	0.311	0.302	0.292	0.477
Lead, total	7439-92-1	E420	0.000050	mg/L		0.000061	<0.000050	<0.000050	<0.000050	0.000090
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0012	0.0012	0.0012	0.0012	0.0016
Magnesium, total	7439-95-4	E420	0.0050	mg/L		0.958	1.11	1.02	0.964	1.09
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.0570	0.0119	0.0104	0.0105	0.113
Mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000062	0.000075	0.000076	0.000053	0.000075
Nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	0.00780
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	0.050
Potassium, total	7440-09-7	E420	0.050	mg/L		0.578	0.605	0.579	0.561	0.855
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00118	0.00112	0.00114	0.00104	0.00144
Selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	0.000080
Silicon, total	7440-21-3	E420	0.10	mg/L		3.48	3.51	3.47	3.48	4.60
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		1.30	2.56	1.36	1.32	1.65
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0138	0.0146	0.0144	0.0138	0.0174
Sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	0.77
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	0.000013

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF41	AQF45	AQF44	AQF43	QC01
					Client sampling date / time	28-Mar-2023 13:10	28-Mar-2023 13:45	28-Mar-2023 14:16	28-Mar-2023 14:39	28-Mar-2023
						WP2303966-006	WP2303966-007	WP2303966-008	WP2303966-009	WP2303966-010
						Result	Result	Result	Result	Result
Total Metals										
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6	E420	0.00030	mg/L		0.00319	0.00159	0.00088	0.00091	0.00267
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.000030	0.000028	0.000024	0.000024	0.000032
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, total	7440-66-6	E420	0.0030	mg/L		0.0033	<0.0030	<0.0030	<0.0030	0.0122
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0201	0.0208	0.0192	0.0201	0.0177
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00035	0.00020	0.00020	0.00019	0.00062
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00723	0.00722	0.0202 RRV	0.0189 RRV	0.0242 RRV
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		3.25	3.62	3.41	3.18	3.12
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	0.00055
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00040	0.00030	0.00261 RRV	0.00175 RRV	0.00382 RRV
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.210	0.197	0.194	0.200	0.184
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	0.000056	0.000063	0.000077
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0012	0.0012	0.0012	0.0012	0.0013
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		0.901	1.01	0.948	0.880	0.833
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00883	0.00688	0.00717	0.00726	0.0890
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000057	0.000073	0.000066	0.000066	0.000052
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	0.00397
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQF41	AQF45	AQF44	AQF43	QC01
					Client sampling date / time	28-Mar-2023 13:10	28-Mar-2023 13:45	28-Mar-2023 14:16	28-Mar-2023 14:39	28-Mar-2023
Analyte	CAS Number	Method	LOR	Unit		WP2303966-006	WP2303966-007	WP2303966-008	WP2303966-009	WP2303966-010
						Result	Result	Result	Result	Result
Dissolved Metals										
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.551	0.562	0.554	0.538	0.650
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00102	0.00101	0.00103	0.00102	0.00110
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	0.000062	<0.000050	0.000062	0.000054
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.14	3.08	3.11	3.19	3.58
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.28	1.34	1.31	1.29	1.31
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0140	0.0150	0.0142	0.0142	0.0146
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	0.00012	0.00012	0.00016
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000024	0.000025	0.000022	0.000023	0.000023
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0023	<0.0010	0.0022	0.0025	0.0051
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		0.00064	0.00251	<0.00050	<0.00050	<0.00050

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF75	AQF70	AQF38	AQF46	AQF42
					Client sampling date / time	29-Mar-2023 08:51	29-Mar-2023 09:04	29-Mar-2023 09:32	29-Mar-2023 09:56	29-Mar-2023 10:16
						WP2303966-011	WP2303966-012	WP2303966-013	WP2303966-014	WP2303966-015
						Result	Result	Result	Result	Result
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		3.4	6.7	8.2	11.2	4.5
Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L		15.7	18.4	44.8	41.0	13.7
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		19.2	22.4	54.6	50.0	16.7
Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		15.7	18.4	44.8	41.0	13.7
Hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L		17.6	20.7	49.2	41.2	12.9
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		<1.0	1.1	3.0	3.0	5.5
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		0.029	<0.010	0.023	0.252	0.053
Bromide	24959-67-9	E235.Br	0.10	mg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Chloride	16887-00-6	E235.Cl-L	0.10	mg/L		0.12	0.11	0.25	0.61	0.43
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.044	0.045	0.127	0.053	0.074
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.23	0.18	0.50	0.72	0.45
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.073	0.146	0.250	0.079	0.112
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus, total	7723-14-0	E372	0.020	mg/L		<0.020	<0.020	<0.020	<0.020	0.025
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		0.72	0.74	<0.30	0.56	0.71
Cyanides										
Cyanide, free	----	E339	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		8.53	10.8	18.4	13.6	11.1
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		8.89	9.79	18.4	14.7	10.4
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0192	0.0278	0.0254	0.0230	0.125
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF75	AQF70	AQF38	AQF46	AQF42
					Client sampling date / time	29-Mar-2023 08:51	29-Mar-2023 09:04	29-Mar-2023 09:32	29-Mar-2023 09:56	29-Mar-2023 10:16
						WP2303966-011	WP2303966-012	WP2303966-013	WP2303966-014	WP2303966-015
						Result	Result	Result	Result	Result
Total Metals										
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00025	0.00020	0.00035	0.00045	0.00021
Barium, total	7440-39-3	E420	0.00010	mg/L		0.00807	0.0114	0.0220	0.0133	0.00897
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium, total	7440-70-2	E420	0.050	mg/L		4.34	5.19	13.7	12.3	3.48
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	0.000018
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	0.00051
Cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	0.00012
Copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	0.00454
Iron, total	7439-89-6	E420	0.010	mg/L		0.048	0.125	0.296	0.621	0.586
Lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	0.000087
Lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	0.0014	0.0011	0.0013
Magnesium, total	7439-95-4	E420	0.0050	mg/L		1.64	1.87	3.65	2.55	1.02
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.00262	0.126	0.217	0.124	0.0500
Mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000078	0.000066	0.00298	0.000062	0.000070
Nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	0.00080
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7	E420	0.050	mg/L		0.538	0.552	1.01	0.835	0.636
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00094	0.00110	0.00156	0.00109	0.00132
Selenium, total	7782-49-2	E420	0.000050	mg/L		0.000075	0.000060	<0.000050	<0.000050	<0.000050
Silicon, total	7440-21-3	E420	0.10	mg/L		1.09	1.46	2.86	1.77	3.64
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		1.13	1.17	2.26	1.48	1.34
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0123	0.0148	0.0332	0.0204	0.0148
Sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	<0.50	0.54	<0.50
Tellurium, total	13494-80-9	E420	0.00020	mg/L		0.00021	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF75	AQF70	AQF38	AQF46	AQF42
					Client sampling date / time	29-Mar-2023 08:51	29-Mar-2023 09:04	29-Mar-2023 09:32	29-Mar-2023 09:56	29-Mar-2023 10:16
						WP2303966-011	WP2303966-012	WP2303966-013	WP2303966-014	WP2303966-015
						Result	Result	Result	Result	Result
Total Metals										
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00045	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	0.00050	0.00040	0.00048	0.00597
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		<0.000010	0.000010	0.000017	<0.000010	0.000044
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	0.0031	0.0045	0.0054
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0150	0.0169	0.0142	0.0123	0.0360
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00027	0.00024	0.00037	0.00046	0.00021
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0220 RRV	0.0117	0.0338 RRV	0.0259 RRV	0.00808
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	0.011	<0.010	<0.010
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		4.18	5.03	13.4	12.4	3.32
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00181 RRV	0.00034	0.00225 RRV	0.00175 RRV	0.00038
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.037	0.074	0.146	0.327	0.219
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000057	<0.000050	<0.000050	0.000060	<0.000050
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	0.0016	0.0012	0.0013
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		1.44	1.79	3.49	2.54	0.930
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00188	0.104	0.127	0.00715	0.0109
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000084	0.000078	0.00296	0.000069	0.000066
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF75	AQF70	AQF38	AQF46	AQF42
					Client sampling date / time	29-Mar-2023 08:51	29-Mar-2023 09:04	29-Mar-2023 09:32	29-Mar-2023 09:56	29-Mar-2023 10:16
						WP2303966-011	WP2303966-012	WP2303966-013	WP2303966-014	WP2303966-015
						Result	Result	Result	Result	Result
Dissolved Metals										
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.490	0.526	0.983	0.834	0.558
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00089	0.00103	0.00154	0.00115	0.00108
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	0.000053	0.000071	0.000070	0.000064
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		0.975	1.30	2.70	1.64	3.17
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.10	1.18	2.18	1.54	1.30
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0124	0.0147	0.0340	0.0213	0.0140
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00013	0.00029	0.00011	0.00013	<0.00010
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	0.00041
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		<0.000010	<0.000010	0.000017	<0.000010	0.000027
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0027	<0.0010	0.0034	0.0035	0.0012
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQF40	FIELD BLANK	TRIP BLANK	----	----
					Client sampling date / time	29-Mar-2023 10:53	29-Mar-2023 12:05	03-Apr-2023	----	----
Analyte	CAS Number	Method	LOR	Unit		WP2303966-016	WP2303966-017	WP2303966-018	--------	--------
						Result	Result	Result	----	----
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		4.0	<2.0	<2.0	----	----
Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L		11.3	<1.0	<1.0	----	----
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		13.8	<1.0	<1.0	----	----
Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	----	----
Alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	----	----
Alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	----	----
Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		11.3	<1.0	<1.0	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.50	mg/L		12.5	<0.50	<0.50	----	----
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		<1.0	<1.0	<1.0	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		0.030	<0.010	0.092	----	----
Bromide	24959-67-9	E235.Br	0.10	mg/L		<0.10	<0.10	<0.10	----	----
Chloride	16887-00-6	E235.Cl-L	0.10	mg/L		0.27	<0.10	<0.10	----	----
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.074	<0.020	<0.020	----	----
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.24	<0.15	0.35	----	----
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.111	<0.020	<0.020	----	----
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.010	<0.010	<0.010	----	----
Phosphorus, total	7723-14-0	E372	0.020	mg/L		<0.020	<0.020	<0.020	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		0.66	<0.30	<0.30	----	----
Cyanides										
Cyanide, free	----	E339	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
Cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		10.4	<0.50	<0.50	----	----
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		9.72	<0.50	<0.50	----	----
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0341	<0.0030	<0.0030	----	----
Antimony, total	7440-36-0	E420	0.00010	mg/L		0.00012	<0.00010	<0.00010	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF40	FIELD BLANK	TRIP BLANK	----	----
					Client sampling date / time	29-Mar-2023 10:53	29-Mar-2023 12:05	03-Apr-2023	----	----
						WP2303966-016	WP2303966-017	WP2303966-018	--------	--------
						Result	Result	Result	----	----
Total Metals										
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00019	<0.00010	<0.00010	----	----
Barium, total	7440-39-3	E420	0.00010	mg/L		0.00696	<0.00010	<0.00010	----	----
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	----	----
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Calcium, total	7440-70-2	E420	0.050	mg/L		3.42	<0.050	<0.050	----	----
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Iron, total	7439-89-6	E420	0.010	mg/L		0.290	<0.010	<0.010	----	----
Lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0012	<0.0010	<0.0010	----	----
Magnesium, total	7439-95-4	E420	0.0050	mg/L		0.961	<0.0050	<0.0050	----	----
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.0108	<0.00010	<0.00010	----	----
Mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000058	<0.000050	<0.000050	----	----
Nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	----	----
Potassium, total	7440-09-7	E420	0.050	mg/L		0.590	<0.050	<0.050	----	----
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00110	<0.00020	<0.00020	----	----
Selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Silicon, total	7440-21-3	E420	0.10	mg/L		3.50	<0.10	<0.10	----	----
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Sodium, total	7440-23-5	E420	0.050	mg/L		1.31	<0.050	<0.050	----	----
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0139	<0.00020	<0.00020	----	----
Sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	<0.50	----	----
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF40	FIELD BLANK	TRIP BLANK	----	----
					Client sampling date / time	29-Mar-2023 10:53	29-Mar-2023 12:05	03-Apr-2023	----	----
						WP2303966-016	WP2303966-017	WP2303966-018	--------	--------
						Result	Result	Result	----	----
Total Metals										
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Titanium, total	7440-32-6	E420	0.00030	mg/L		0.00085	<0.00030	<0.00030	----	----
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.000022	<0.000010	<0.000010	----	----
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	<0.0030	----	----
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0222	<0.0010	<0.0010	----	----
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00017	<0.00010	<0.00010	----	----
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00694	0.00227 RRV	<0.00010	----	----
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	----	----
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		3.24	<0.050	<0.050	----	----
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00068	0.00195 RRV	<0.00020	----	----
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.204	<0.010	<0.010	----	----
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	0.000104 RRV	<0.000050	----	----
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0013	<0.0010	<0.0010	----	----
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		0.906	<0.0050	<0.0050	----	----
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00794	0.00012	<0.00010	----	----
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000159 RRV	<0.000050	<0.000050	----	----
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQF40	FIELD BLANK	TRIP BLANK	----	----
					Client sampling date / time	29-Mar-2023 10:53	29-Mar-2023 12:05	03-Apr-2023	----	----
Analyte	CAS Number	Method	LOR	Unit		WP2303966-016	WP2303966-017	WP2303966-018	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.538	<0.050	<0.050	----	----
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00099	<0.00020	<0.00020	----	----
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000058	<0.000050	<0.000050	----	----
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.13	<0.050	<0.050	----	----
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.28	<0.050	<0.050	----	----
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0140	<0.00020	<0.00020	----	----
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	<0.50	----	----
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	0.00011	<0.00010	----	----
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	----	----
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000021	<0.000010	<0.000010	----	----
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	0.0013	<0.0010	----	----
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	----	----
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	----	----
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WP2303966**	Page	: 1 of 53
Client	: **Alamos Gold Inc.**	Laboratory	: Winnipeg - Environmental
Contact	: Karen Mathers	Account Manager	: Judy Dalmaijer
Address	: C/O Stantec Consulting 500 - 311 Portage Avenue Winnipeg MB Canada R3B 2B9	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	: 416 368 9932	Telephone	: +1 204 255 9720
Project	: ----	Date Samples Received	: 03-Apr-2023 11:20
PO	: ----	Issue Date	: 11-Apr-2023 15:34
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: ALAMOS Gold Inc. - (Q88846)_V2		
No. of samples received	: 18		
No. of samples analysed	: 18		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Total Metals	WP2303966-010	QC01	Antimony, total	7440-36-0	E420	0.00110 % DUP-H	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

Result Qualifiers

Qualifier	Description
DUP-H	*Duplicate results outside ALS DQO, due to sample heterogeneity.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
TRIP BLANK	E303	03-Apr-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	1 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQF38	E303	29-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQF40	E303	29-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQF42	E303	29-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQF46	E303	29-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQF70	E303	29-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQF75	E303	29-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
FIELD BLANK	E303	29-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	5 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQF41	E303	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQF43	E303	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQF44	E303	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQF45	E303	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQM28	E303	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQM29C	E303	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQM71	E303	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
AQM72	E303	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM73	E303	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) QC01	E303	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE TRIP BLANK	E235.Br	03-Apr-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF38	E235.Br	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF40	E235.Br	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF42	E235.Br	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF46	E235.Br	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF70	E235.Br	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF75	E235.Br	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC										
HDPE FIELD BLANK	E235.Br	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF41	E235.Br	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF43	E235.Br	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF44	E235.Br	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQF45	E235.Br	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM28	E235.Br	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM29C	E235.Br	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM71	E235.Br	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM72	E235.Br	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC										
HDPE AQM73	E235.Br	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC										
HDPE QC01	E235.Br	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE TRIP BLANK	E235.Cl-L	03-Apr-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF38	E235.Cl-L	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF40	E235.Cl-L	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF42	E235.Cl-L	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF46	E235.Cl-L	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF70	E235.Cl-L	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF75	E235.Cl-L	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
FIELD BLANK	E235.Cl-L	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
AQF41	E235.Cl-L	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
AQF43	E235.Cl-L	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
AQF44	E235.Cl-L	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
AQF45	E235.Cl-L	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
AQM28	E235.Cl-L	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
AQM29C	E235.Cl-L	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
AQM71	E235.Cl-L	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
AQM72	E235.Cl-L	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQM73	E235.Cl-L	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE QC01	E235.Cl-L	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TRIP BLANK	E235.F	03-Apr-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF38	E235.F	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF40	E235.F	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF42	E235.F	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF46	E235.F	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF70	E235.F	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF75	E235.F	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE FIELD BLANK	E235.F	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF41	E235.F	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF43	E235.F	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF44	E235.F	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF45	E235.F	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM28	E235.F	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM29C	E235.F	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM71	E235.F	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM72	E235.F	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM73	E235.F	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE QC01	E235.F	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE TRIP BLANK	E235.NO3	03-Apr-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF38	E235.NO3	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF40	E235.NO3	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF42	E235.NO3	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF46	E235.NO3	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF70	E235.NO3	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF75	E235.NO3	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE FIELD BLANK	E235.NO3	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF41	E235.NO3	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF43	E235.NO3	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF44	E235.NO3	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQF45	E235.NO3	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM28	E235.NO3	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM29C	E235.NO3	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM71	E235.NO3	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM72	E235.NO3	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE AQM73	E235.NO3	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	✖ EHTR-FM
Anions and Nutrients : Nitrate in Water by IC										
HDPE QC01	E235.NO3	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	✖ EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE TRIP BLANK	E235.NO2	03-Apr-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF38	E235.NO2	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	✖ EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF40	E235.NO2	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	✖ EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF42	E235.NO2	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	✖ EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF46	E235.NO2	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	✖ EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF70	E235.NO2	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	✖ EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF75	E235.NO2	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	✖ EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE FIELD BLANK	E235.NO2	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	7 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF41	E235.NO2	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF43	E235.NO2	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF44	E235.NO2	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQF45	E235.NO2	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM28	E235.NO2	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM29C	E235.NO2	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM71	E235.NO2	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM72	E235.NO2	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	× EHTR-FM

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE AQM73	E235.NO2	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	✖ EHTR-FM
Anions and Nutrients : Nitrite in Water by IC										
HDPE QC01	E235.NO2	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	3 days	8 days	✖ EHTR-FM
Anions and Nutrients : Sulfate in Water by IC										
HDPE TRIP BLANK	E235.SO4	03-Apr-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF38	E235.SO4	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF40	E235.SO4	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF42	E235.SO4	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF46	E235.SO4	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF70	E235.SO4	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF75	E235.SO4	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE FIELD BLANK	E235.SO4	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF41	E235.SO4	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF43	E235.SO4	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF44	E235.SO4	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF45	E235.SO4	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM28	E235.SO4	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM29C	E235.SO4	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM71	E235.SO4	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM72	E235.SO4	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
AQM73	E235.SO4	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
QC01	E235.SO4	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
TRIP BLANK	E319	03-Apr-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	2 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF38	E319	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF40	E319	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF42	E319	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF46	E319	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF70	E319	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF75	E319	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
FIELD BLANK	E319	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF41	E319	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF43	E319	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF44	E319	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQF45	E319	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQM28	E319	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQM29C	E319	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQM71	E319	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
AQM72	E319	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM73	E319	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) QC01	E319	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) TRIP BLANK	E372	03-Apr-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	2 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF38	E372	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF40	E372	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF42	E372	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF46	E372	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF70	E372	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQF75	E372	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid)										
FIELD BLANK	E372	29-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid)										
AQF41	E372	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid)										
AQF43	E372	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid)										
AQF44	E372	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid)										
AQF45	E372	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid)										
AQM28	E372	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid)										
AQM29C	E372	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid)										
AQM71	E372	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid)										
AQM72	E372	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) AQM73	E372	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg/L)										
Amber glass total (sulfuric acid) QC01	E372	28-Mar-2023	04-Apr-2023	----	----		05-Apr-2023	28 days	8 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TRIP BLANK	E339	03-Apr-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	3 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF38	E339	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF40	E339	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF42	E339	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF46	E339	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF70	E339	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF75	E339	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
FIELD BLANK	E339	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF41	E339	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF43	E339	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF44	E339	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF45	E339	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM28	E339	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM29C	E339	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM71	E339	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM72	E339	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM73	E339	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Free Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) QC01	E339	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	9 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TRIP BLANK	E333	03-Apr-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	3 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF38	E333	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF40	E333	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF42	E333	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF46	E333	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF70	E333	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF75	E333	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
FIELD BLANK	E333	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF41	E333	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF43	E333	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF44	E333	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF45	E333	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM28	E333	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM29C	E333	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM71	E333	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM72	E333	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM73	E333	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : Total Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) QC01	E333	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	9 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) TRIP BLANK	E336	03-Apr-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	3 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF38	E336	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF40	E336	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF42	E336	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF46	E336	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF70	E336	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQF75	E336	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
FIELD BLANK	E336	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF41	E336	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF43	E336	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF44	E336	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF45	E336	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM28	E336	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM29C	E336	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM71	E336	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide)										
AQM72	E336	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) AQM73	E336	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	8 days	✓
Cyanides : WAD Cyanide										
UV-inhibited HDPE - total (sodium hydroxide) QC01	E336	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	14 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) TRIP BLANK	E421	03-Apr-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF38	E421	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF40	E421	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF42	E421	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF46	E421	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF70	E421	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF75	E421	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) FIELD BLANK	E421	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF41	E421	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF43	E421	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF44	E421	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF45	E421	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM28	E421	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM29C	E421	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM71	E421	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM72	E421	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM73	E421	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) QC01	E421	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	180 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) TRIP BLANK	E358-L	03-Apr-2023	04-Apr-2023	3 days	1 days	✓	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQF38	E358-L	29-Mar-2023	04-Apr-2023	3 days	6 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQF40	E358-L	29-Mar-2023	04-Apr-2023	3 days	6 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQF42	E358-L	29-Mar-2023	04-Apr-2023	3 days	6 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQF46	E358-L	29-Mar-2023	04-Apr-2023	3 days	6 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQF70	E358-L	29-Mar-2023	04-Apr-2023	3 days	6 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQF75	E358-L	29-Mar-2023	04-Apr-2023	3 days	6 days	× EHTR	04-Apr-2023	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) FIELD BLANK	E358-L	29-Mar-2023	04-Apr-2023	3 days	6 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQF41	E358-L	28-Mar-2023	04-Apr-2023	3 days	7 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQF43	E358-L	28-Mar-2023	04-Apr-2023	3 days	7 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQF44	E358-L	28-Mar-2023	04-Apr-2023	3 days	7 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQF45	E358-L	28-Mar-2023	04-Apr-2023	3 days	7 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQM28	E358-L	28-Mar-2023	04-Apr-2023	3 days	7 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQM29C	E358-L	28-Mar-2023	04-Apr-2023	3 days	7 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQM71	E358-L	28-Mar-2023	04-Apr-2023	3 days	7 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQM72	E358-L	28-Mar-2023	04-Apr-2023	3 days	7 days	× EHTR	04-Apr-2023	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) AQM73	E358-L	28-Mar-2023	04-Apr-2023	3 days	7 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) QC01	E358-L	28-Mar-2023	04-Apr-2023	3 days	7 days	× EHTR	04-Apr-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TRIP BLANK	E355-L	03-Apr-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF38	E355-L	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF40	E355-L	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF42	E355-L	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF46	E355-L	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF70	E355-L	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF75	E355-L	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
FIELD BLANK	E355-L	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
AQF41	E355-L	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
AQF43	E355-L	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
AQF44	E355-L	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
AQF45	E355-L	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
AQM28	E355-L	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
AQM29C	E355-L	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
AQM71	E355-L	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
AQM72	E355-L	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM73	E355-L	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) QC01	E355-L	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE TRIP BLANK	E283	03-Apr-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF38	E283	29-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF40	E283	29-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF42	E283	29-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF46	E283	29-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF70	E283	29-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF75	E283	29-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE FIELD BLANK	E283	29-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF41	E283	28-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	9 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF43	E283	28-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	9 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF44	E283	28-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	9 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF45	E283	28-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	9 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM28	E283	28-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	9 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM29C	E283	28-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	9 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM71	E283	28-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	9 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM72	E283	28-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE AQM73	E283	28-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	9 days	✓
Physical Tests : Acidity by Titration										
HDPE QC01	E283	28-Mar-2023	06-Apr-2023	----	----		06-Apr-2023	14 days	9 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TRIP BLANK	E290	03-Apr-2023	04-Apr-2023	----	----		04-Apr-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF38	E290	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF40	E290	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF41	E290	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF42	E290	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF44	E290	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF45	E290	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE AQF46	E290	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF70	E290	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF75	E290	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM28	E290	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM29C	E290	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM71	E290	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM72	E290	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM73	E290	28-Mar-2023	03-Apr-2023	----	----		03-Apr-2023	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE FIELD BLANK	E290	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE AQF43	E290	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE QC01	E290	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	14 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE TRIP BLANK	E160-L	03-Apr-2023	----	----	----		05-Apr-2023	7 days	3 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQF38	E160-L	29-Mar-2023	----	----	----		05-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQF40	E160-L	29-Mar-2023	----	----	----		05-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQF41	E160-L	28-Mar-2023	----	----	----		04-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQF42	E160-L	29-Mar-2023	----	----	----		05-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQF43	E160-L	28-Mar-2023	----	----	----		04-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQF44	E160-L	28-Mar-2023	----	----	----		04-Apr-2023	7 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQF45	E160-L	28-Mar-2023	----	----	----		04-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQF46	E160-L	29-Mar-2023	----	----	----		05-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQF70	E160-L	29-Mar-2023	----	----	----		05-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQF75	E160-L	29-Mar-2023	----	----	----		05-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQM28	E160-L	28-Mar-2023	----	----	----		04-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQM29C	E160-L	28-Mar-2023	----	----	----		04-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQM71	E160-L	28-Mar-2023	----	----	----		04-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQM72	E160-L	28-Mar-2023	----	----	----		04-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE AQM73	E160-L	28-Mar-2023	----	----	----		04-Apr-2023	7 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE										
FIELD BLANK	E160-L	29-Mar-2023	----	----	----		05-Apr-2023	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE										
QC01	E160-L	28-Mar-2023	----	----	----		04-Apr-2023	7 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
TRIP BLANK	E532	03-Apr-2023	----	----	----		05-Apr-2023	28 days	3 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQF38	E532	29-Mar-2023	----	----	----		05-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQF40	E532	29-Mar-2023	----	----	----		05-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQF42	E532	29-Mar-2023	----	----	----		05-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQF46	E532	29-Mar-2023	----	----	----		05-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQF70	E532	29-Mar-2023	----	----	----		05-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQF75	E532	29-Mar-2023	----	----	----		05-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
FIELD BLANK	E532	29-Mar-2023	----	----	----		05-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQF41	E532	28-Mar-2023	----	----	----		05-Apr-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQF43	E532	28-Mar-2023	----	----	----		05-Apr-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQF44	E532	28-Mar-2023	----	----	----		05-Apr-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQF45	E532	28-Mar-2023	----	----	----		05-Apr-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQM28	E532	28-Mar-2023	----	----	----		05-Apr-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQM29C	E532	28-Mar-2023	----	----	----		05-Apr-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQM71	E532	28-Mar-2023	----	----	----		05-Apr-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide)										
AQM72	E532	28-Mar-2023	----	----	----		05-Apr-2023	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM73	E532	28-Mar-2023	----	----	----		05-Apr-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) QC01	E532	28-Mar-2023	----	----	----		05-Apr-2023	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) TRIP BLANK	E508	03-Apr-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) AQF38	E508	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) AQF40	E508	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) AQF42	E508	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) AQF46	E508	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) AQF70	E508	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) AQF75	E508	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
FIELD BLANK	E508	29-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
AQF41	E508	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
AQF43	E508	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
AQF44	E508	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
AQF45	E508	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
AQM28	E508	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
AQM29C	E508	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
AQM71	E508	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
AQM72	E508	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) AQM73	E508	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) QC01	E508	28-Mar-2023	04-Apr-2023	----	----		04-Apr-2023	28 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) TRIP BLANK	E420	03-Apr-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF38	E420	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF40	E420	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF42	E420	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF46	E420	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF70	E420	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF75	E420	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) FIELD BLANK	E420	29-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF41	E420	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF43	E420	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF44	E420	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF45	E420	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM28	E420	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM29C	E420	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM71	E420	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM72	E420	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM73	E420	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) QC01	E420	28-Mar-2023	05-Apr-2023	----	----		05-Apr-2023	180 days	9 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: ✗ = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	888793	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	885172	2	31	6.4	5.0	✓
Ammonia in Water by Colour	E303	885201	2	25	8.0	5.0	✓
Bromide in Water by IC	E235.Br	886126	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	886125	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	885956	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	885873	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	886123	0	22	0.0	5.0	✗
Free Cyanide	E339	887695	1	18	5.5	5.0	✓
Nitrate in Water by IC	E235.NO3	886122	1	37	2.7	5.0	✗
Nitrite in Water by IC	E235.NO2	886121	1	39	2.5	5.0	✗
Sulfate in Water by IC	E235.SO4	886124	0	21	0.0	5.0	✗
Total Cyanide	E333	887696	1	18	5.5	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	887736	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	885320	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	886268	1	19	5.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	887668	2	38	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	885876	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	886770	2	33	6.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	885359	2	31	6.4	5.0	✓
WAD Cyanide	E336	887694	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	888793	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	885172	2	31	6.4	5.0	✓
Ammonia in Water by Colour	E303	885201	2	25	8.0	5.0	✓
Bromide in Water by IC	E235.Br	886126	2	18	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	886125	2	18	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	885956	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	885873	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	886123	2	22	9.0	5.0	✓
Free Cyanide	E339	887695	1	18	5.5	5.0	✓
Nitrate in Water by IC	E235.NO3	886122	2	37	5.4	5.0	✓
Nitrite in Water by IC	E235.NO2	886121	2	39	5.1	5.0	✓
Sulfate in Water by IC	E235.SO4	886124	2	21	9.5	5.0	✓
Total Cyanide	E333	887696	1	18	5.5	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	887736	1	19	5.2	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Kjeldahl Nitrogen by Colourimetry	E319	885320	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	886268	1	19	5.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	887668	2	38	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	885876	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	886770	2	33	6.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	885359	2	31	6.4	5.0	✓
WAD Cyanide	E336	887694	1	18	5.5	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	888793	1	18	5.5	5.0	✓
Alkalinity Species by Titration	E290	885172	2	31	6.4	5.0	✓
Ammonia in Water by Colour	E303	885201	2	25	8.0	5.0	✓
Bromide in Water by IC	E235.Br	886126	2	18	11.1	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	886125	2	18	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	885956	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	885873	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	886123	2	22	9.0	5.0	✓
Free Cyanide	E339	887695	1	18	5.5	5.0	✓
Nitrate in Water by IC	E235.NO3	886122	2	37	5.4	5.0	✓
Nitrite in Water by IC	E235.NO2	886121	2	39	5.1	5.0	✓
Sulfate in Water by IC	E235.SO4	886124	2	21	9.5	5.0	✓
Total Cyanide	E333	887696	1	18	5.5	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	887736	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	885320	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	886268	1	19	5.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	887668	2	38	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	885876	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	886770	2	33	6.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	885359	2	31	6.4	5.0	✓
WAD Cyanide	E336	887694	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
Ammonia in Water by Colour	E303	885201	2	25	8.0	5.0	✓
Bromide in Water by IC	E235.Br	886126	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	886125	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	885956	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	885873	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	886123	0	22	0.0	5.0	×
Free Cyanide	E339	887695	1	18	5.5	5.0	✓
Nitrate in Water by IC	E235.NO3	886122	1	37	2.7	5.0	×
Nitrite in Water by IC	E235.NO2	886121	1	39	2.5	5.0	×

Matrix: **Water**

Evaluation: ✗ = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Sulfate in Water by IC	E235.SO4	886124	0	21	0.0	5.0	✗
Total Cyanide	E333	887696	1	18	5.5	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	887736	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	885320	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	886268	1	19	5.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	887668	2	38	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	885876	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	886770	2	33	6.0	5.0	✓
WAD Cyanide	E336	887694	1	18	5.5	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry (Low Level)	E160-L Winnipeg - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Bromide in Water by IC	E235.Br Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Waterloo - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
Alkalinity Species by Titration	E290 Winnipeg - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia in Water by Colour	E303 Winnipeg - Environmental	Water	APHA 4500 NH3-NITROGEN (AMMONIA)	This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.
Total Kjeldahl Nitrogen by Colourimetry	E319 Winnipeg - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by colourimetric analysis.
Total Cyanide	E333 Waterloo - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide	E336 Waterloo - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Free Cyanide	E339 Waterloo - Environmental	Water	ASTM D7237 (mod)	Free Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line gas diffusion followed by colourmetric analysis.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Winnipeg - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Winnipeg - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.02 mg/L)	E372 Winnipeg - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total metals in Water by CRC ICPMS	E420 Winnipeg - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Winnipeg - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 Winnipeg - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Total Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection. Results are based on an un-filtered, field-preserved sample.
Hardness (Calculated) from Total Ca/Mg	EC100A Winnipeg - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Winnipeg - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Winnipeg - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Winnipeg - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Winnipeg - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Winnipeg - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
	Winnipeg - Environmental			

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **WP2303966**	Page	: 1 of 24
Client	: Alamos Gold Inc.	Laboratory	: Winnipeg - Environmental
Contact	: Karen Mathers	Account Manager	: Judy Dalmaijer
Address	: C/O Stantec Consulting 500 - 311 Portage Avenue Winnipeg MB Canada R3B 2B9	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	:	Telephone	: +1 204 255 9720
Project	: ----	Date Samples Received	: 03-Apr-2023 11:20
PO	: ----	Date Analysis Commenced	: 03-Apr-2023
C-O-C number	: ----	Issue Date	: 11-Apr-2023 15:31
Sampler	: ---- 416 368 9932		
Site	: ----		
Quote number	: ALAMOS Gold Inc. - (Q88846)_V2		
No. of samples received	: 18		
No. of samples analysed	: 18		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Adrienne Tarr		Winnipeg Metals, Winnipeg, Manitoba
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Metals, Waterloo, Ontario
Lee McTavish		Winnipeg Inorganics, Winnipeg, Manitoba
Lee McTavish		Winnipeg Metals, Winnipeg, Manitoba
Oleksandr Busel		Winnipeg Inorganics, Winnipeg, Manitoba
Oleksandr Busel		Winnipeg Metals, Winnipeg, Manitoba
Zandrea Grabinski		Winnipeg Inorganics, Winnipeg, Manitoba

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 885172)											
WP2303945-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	134	134	0.0744%	20%	----
Physical Tests (QC Lot: 885359)											
WP2303945-001	Anonymous	Solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 886189)											
WP2304067-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	583	572	2.01%	20%	----
Physical Tests (QC Lot: 887732)											
WP2304122-001	Anonymous	Solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.7	2.9	0.2	Diff <2x LOR	----
Physical Tests (QC Lot: 888793)											
WP2303966-001	AQM28	Acidity (as CaCO3)	----	E283	2.0	mg/L	6.3	5.9	0.4	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 885201)											
WP2303945-005	Anonymous	Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 885202)											
WP2303966-014	AQF46	Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L	0.252	0.252	0.156%	20%	----
Anions and Nutrients (QC Lot: 885320)											
WP2303966-002	AQM29C	Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	0.41	0.36	0.05	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 886125)											
WP2303966-003	AQM71	Chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.18	3.16	0.498%	20%	----
Anions and Nutrients (QC Lot: 886126)											
WP2303966-003	AQM71	Bromide	24959-67-9	E235.Br	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 886770)											
WP2303911-001	Anonymous	Phosphorus, total	7723-14-0	E372	0.020	mg/L	0.531	0.527	0.775%	20%	----
Anions and Nutrients (QC Lot: 886771)											
WP2303966-014	AQF46	Phosphorus, total	7723-14-0	E372	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 887364)											
WP2304060-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	0.011	0.012	0.0008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 887365)											
WP2304060-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	0.334	0.335	0.318%	20%	----
Cyanides (QC Lot: 887694)											
WP2303966-003	AQM71	Cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 887695)											

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Cyanides (QC Lot: 887695) - continued											
WP2303966-003	AQM71	Cyanide, free	----	E339	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Cyanides (QC Lot: 887696)											
WP2303966-003	AQM71	Cyanide, strong acid dissociable (Total)	----	E333	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 885873)											
WP2303966-001	AQM28	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	13.9	14.4	3.47%	20%	----
Organic / Inorganic Carbon (QC Lot: 885876)											
WP2303966-001	AQM28	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	13.7	14.1	2.76%	20%	----
Total Metals (QC Lot: 886268)											
WP2303957-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 887668)											
WP2303945-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.113	0.121	7.37%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00101	0.00096	0.00004	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0211	0.0214	1.18%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.016	0.015	0.0006	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	38.2	38.6	0.822%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00164	0.00164	0.0000004	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.067	0.070	0.003	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000084	0.000086	0.000001	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0067	0.0065	0.0002	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	12.6	12.8	2.38%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00268	0.00269	0.263%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000491	0.000483	0.000008	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00078	0.00080	0.00001	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	1.94	1.94	0.441%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00080	0.00082	0.00002	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 887668) - continued											
WP2303945-001	Anonymous	Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000065	0.000051	0.000014	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	3.23	3.28	1.78%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	10.9	11.1	1.33%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.0949	0.0981	3.34%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	7.39	7.70	4.13%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	0.00343	0.00371	7.84%	20%	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000536	0.000534	0.406%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00110	0.00110	0.000005	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00033	0.00024	0.00009	Diff <2x LOR	----
Total Metals (QC Lot: 887671)											
WP2303966-010	QC01	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0853	0.0871	2.09%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00130	# 0.00020	0.00110	Diff <2x LOR	DUP-H
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00054	0.00052	0.00002	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0125	0.0125	0.0360%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000108	<0.000050	0.000058	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000194	0.0000158	0.0000036	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	3.94	3.92	0.580%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00162	0.00165	1.64%	20%	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00129	0.00125	0.00003	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.477	0.473	0.884%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000090	0.000086	0.000004	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0016	0.0016	0.000007	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	1.09	1.08	1.00%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 887671) - continued											
WP2303966-010	QC01	Manganese, total	7439-96-5	E420	0.00010	mg/L	0.113	0.113	0.0407%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000075	0.000069	0.000006	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00780	0.00777	0.466%	20%	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	0.050	0.051	0.0009	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	0.855	0.854	0.205%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00144	0.00153	0.00009	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000080	0.000086	0.000006	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	4.60	4.72	2.55%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	1.65	1.61	2.33%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.0174	0.0174	0.410%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	0.77	0.72	0.06	Diff <2x LOR	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	0.000013	<0.000010	0.000003	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	0.00267	0.00299	0.00032	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000032	0.000036	0.000005	Diff <2x LOR	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0122	0.0117	0.0004	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 885956)											
WP2303950-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0503	0.0508	0.983%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.701	0.699	0.206%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.174	0.172	1.10%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0681	0.0678	0.480%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.320	0.330	3.13%	20%	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000236	0.0000278	0.0000042	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.500	mg/L	486	485	0.243%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000022	0.000021	0.0000010	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 885956) - continued											
WP2303950-001	Anonymous	Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.159	0.156	1.82%	20%	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0574	0.0567	1.07%	20%	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.013	0.013	0.0003	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0186	0.0191	2.71%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	38.8	39.0	0.612%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.110	0.109	0.447%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0386	0.0386	0.217%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0222	0.0222	0.247%	20%	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	81.6	81.4	0.233%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.0158	0.0158	0.459%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.00996	0.0106	6.06%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.96	2.96	0.0480%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000024	0.000023	0.000001	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	290	295	1.48%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	2.28	2.27	0.409%	20%	----
		Sulfur, dissolved	7704-34-9	E421	5.00	mg/L	510	515	1.15%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000048	0.000041	0.000006	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	0.0200	0.0201	0.266%	20%	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00111	0.00112	0.724%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00140	0.00138	0.00002	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0024	0.0023	0.0001	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 887736)											
WP2303966-001	AQM28	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	0.00061	0.00056	0.00005	Diff <2x LOR	----

Qualifiers

Qualifier	*Description*
DUP-H	*Duplicate results outside ALS DQO, due to sample heterogeneity.*

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 885172)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 885359)						
Solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 886189)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 887732)						
Solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 888793)						
Acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Anions and Nutrients (QCLot: 885201)						
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 885202)						
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 885320)						
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	<0.20	----
Anions and Nutrients (QCLot: 886121)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 886122)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 886123)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 886124)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 886125)						
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 886126)						
Bromide	24959-67-9	E235.Br	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 886770)						
Phosphorus, total	7723-14-0	E372	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 886771)						
Phosphorus, total	7723-14-0	E372	0.02	mg/L	<0.020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 887363)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 887364)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 887365)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 887366)						
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 887367)						
Bromide	24959-67-9	E235.Br	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 887368)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Cyanides (QCLot: 887694)						
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 887695)						
Cyanide, free	----	E339	0.002	mg/L	<0.0020	----
Cyanides (QCLot: 887696)						
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 885873)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 885876)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 886268)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 887668)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 887668) - continued						
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 887671)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 887671) - continued						
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 885956)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 885956) - continued						
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 885956) - continued						
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Speciated Metals (QCLot: 887736)						
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 885172)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	100 mg/L	101	85.0	115	----
Physical Tests (QCLot: 885359)									
Solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	96.1	85.0	115	----
Physical Tests (QCLot: 886189)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	100 mg/L	102	85.0	115	----
Physical Tests (QCLot: 887732)									
Solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	94.7	85.0	115	----
Physical Tests (QCLot: 888793)									
Acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	105	85.0	115	----
Anions and Nutrients (QCLot: 885201)									
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	0.25 mg/L	98.2	85.0	115	----
Anions and Nutrients (QCLot: 885202)									
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	0.25 mg/L	98.4	85.0	115	----
Anions and Nutrients (QCLot: 885320)									
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	4 mg/L	95.1	75.0	125	----
Anions and Nutrients (QCLot: 886121)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	98.4	90.0	110	----
Anions and Nutrients (QCLot: 886122)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	98.0	90.0	110	----
Anions and Nutrients (QCLot: 886123)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 886124)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.6	90.0	110	----
Anions and Nutrients (QCLot: 886125)									
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.3	90.0	110	----
Anions and Nutrients (QCLot: 886126)									
Bromide	24959-67-9	E235.Br	0.1	mg/L	0.5 mg/L	95.3	85.0	115	----
Anions and Nutrients (QCLot: 886770)									
Phosphorus, total	7723-14-0	E372	0.02	mg/L	0.5 mg/L	102	80.0	120	----
Anions and Nutrients (QCLot: 886771)									
Phosphorus, total	7723-14-0	E372	0.02	mg/L	0.5 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 887363)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 887364)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	98.9	90.0	110	----
Anions and Nutrients (QCLot: 887365)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	97.1	90.0	110	----
Anions and Nutrients (QCLot: 887366)									
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	97.4	90.0	110	----
Anions and Nutrients (QCLot: 887367)									
Bromide	24959-67-9	E235.Br	0.1	mg/L	0.5 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 887368)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.1	90.0	110	----
Cyanides (QCLot: 887694)									
Cyanide, weak acid dissociable	----	E336	0.002	mg/L	0.125 mg/L	101	80.0	120	----
Cyanides (QCLot: 887695)									
Cyanide, free	----	E339	0.002	mg/L	0.125 mg/L	93.2	80.0	120	----
Cyanides (QCLot: 887696)									
Cyanide, strong acid dissociable (Total)	----	E333	0.002	mg/L	0.25 mg/L	95.9	80.0	120	----
Organic / Inorganic Carbon (QCLot: 885873)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	95.4	80.0	120	----
Organic / Inorganic Carbon (QCLot: 885876)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Total Metals (QCLot: 886268)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
Total Metals (QCLot: 887668)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	97.0	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	96.0	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.1	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	93.1	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.4	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	96.3	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 887668) - continued									
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	94.4	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	96.7	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.7	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	92.9	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.4	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	107	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	94.9	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	106	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	96.2	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	94.5	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	114	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	112	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	85.6	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	91.6	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	116	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	93.8	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	88.7	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	98.0	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	92.8	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	97.9	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.1	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	89.4	80.0	120	----
Total Metals (QCLot: 887671)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.5	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	96.0	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 887671) - continued									
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	92.4	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	95.8	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.9	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	97.2	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	95.9	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	97.9	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.5	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	93.3	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	110	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	95.2	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	96.6	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	107	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.4	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	98.5	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	108	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	87.9	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	93.4	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	103	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	94.6	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	88.1	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	99.5	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	92.0	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	97.6	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.4	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	89.0	80.0	120	----
Dissolved Metals (QCLot: 885956)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 885956) - continued									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	87.8	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	95.9	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.9	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	92.2	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.1	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	88.7	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.2	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	93.5	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	93.0	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	91.2	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	91.7	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	92.6	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.2	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	88.3	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	88.9	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.1	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.2	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	89.8	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	94.8	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	92.9	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	92.9	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	90.0	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	89.8	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	107	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	82.9	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	97.9	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	91.0	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	86.0	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	98.1	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	89.1	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	85.0	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.5	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.1	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	93.8	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	93.0	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 885956) - continued									
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	93.7	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	90.9	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	87.5	80.0	120	----
Speciated Metals (QCLot: 887736)									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.025 mg/L	98.4	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 885201)										
WP2303945-005	Anonymous	Ammonia, total (as N)	7664-41-7	E303	0.239 mg/L	0.25 mg/L	95.7	75.0	125	----
Anions and Nutrients (QCLot: 885202)										
WP2303966-014	AQF46	Ammonia, total (as N)	7664-41-7	E303	ND mg/L	0.25 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 885320)										
WP2303966-002	AQM29C	Kjeldahl nitrogen, total [TKN]	----	E319	5.18 mg/L	5 mg/L	104	70.0	130	----
Anions and Nutrients (QCLot: 886125)										
WP2303966-003	AQM71	Chloride	16887-00-6	E235.Cl-L	112 mg/L	100 mg/L	112	75.0	125	----
Anions and Nutrients (QCLot: 886126)										
WP2303966-003	AQM71	Bromide	24959-67-9	E235.Br	0.57 mg/L	0.5 mg/L	114	75.0	125	----
Anions and Nutrients (QCLot: 886770)										
WP2303931-001	Anonymous	Phosphorus, total	7723-14-0	E372	0.256 mg/L	0.25 mg/L	102	70.0	130	----
Anions and Nutrients (QCLot: 886771)										
WP2303966-015	AQF42	Phosphorus, total	7723-14-0	E372	0.251 mg/L	0.25 mg/L	100	70.0	130	----
Anions and Nutrients (QCLot: 887364)										
WP2304060-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.522 mg/L	0.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 887365)										
WP2304060-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	2.55 mg/L	2.5 mg/L	102	75.0	125	----
Cyanides (QCLot: 887694)										
WP2303966-003	AQM71	Cyanide, weak acid dissociable	----	E336	0.128 mg/L	0.125 mg/L	102	75.0	125	----
Cyanides (QCLot: 887695)										
WP2303966-003	AQM71	Cyanide, free	----	E339	0.129 mg/L	0.125 mg/L	104	75.0	125	----
Cyanides (QCLot: 887696)										
WP2303966-003	AQM71	Cyanide, strong acid dissociable (Total)	----	E333	0.220 mg/L	0.25 mg/L	87.9	75.0	125	----
Organic / Inorganic Carbon (QCLot: 885873)										
WP2303966-002	AQM29C	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 885876)										
WP2303966-002	AQM29C	Carbon, total organic [TOC]	----	E355-L	ND mg/L	5 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 886268)										
WP2303966-001	AQM28	Mercury, total	7439-97-6	E508	0.0000991 mg/L	0.0001 mg/L	99.1	70.0	130	----
Total Metals (QCLot: 887668)										
WP2303945-001	Anonymous	Aluminum, total	7429-90-5	E420	0.216 mg/L	0.2 mg/L	108	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0442 mg/L	0.04 mg/L	110	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0103 mg/L	0.01 mg/L	103	70.0	130	----
		Boron, total	7440-42-8	E420	0.115 mg/L	0.1 mg/L	115	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00419 mg/L	0.004 mg/L	105	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0429 mg/L	0.04 mg/L	107	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0213 mg/L	0.02 mg/L	107	70.0	130	----
		Copper, total	7440-50-8	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		Iron, total	7439-89-6	E420	2.09 mg/L	2 mg/L	105	70.0	130	----
		Lead, total	7439-92-1	E420	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		Lithium, total	7439-93-2	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0426 mg/L	0.04 mg/L	106	70.0	130	----
		Phosphorus, total	7723-14-0	E420	10.7 mg/L	10 mg/L	107	70.0	130	----
		Potassium, total	7440-09-7	E420	4.15 mg/L	4 mg/L	104	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0465 mg/L	0.04 mg/L	116	70.0	130	----
		Silicon, total	7440-21-3	E420	10.3 mg/L	10 mg/L	103	70.0	130	----
		Silver, total	7440-22-4	E420	0.00390 mg/L	0.004 mg/L	97.4	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	23.1 mg/L	20 mg/L	116	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00394 mg/L	0.004 mg/L	98.4	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		Tin, total	7440-31-5	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 887668) - continued										
WP2303945-001	Anonymous	Titanium, total	7440-32-6	E420	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00396 mg/L	0.004 mg/L	98.9	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		Zinc, total	7440-66-6	E420	0.408 mg/L	0.4 mg/L	102	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
Total Metals (QCLot: 887671)										
WP2303966-010	QC01	Aluminum, total	7429-90-5	E420	0.205 mg/L	0.2 mg/L	103	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Barium, total	7440-39-3	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0108 mg/L	0.01 mg/L	108	70.0	130	----
		Boron, total	7440-42-8	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00422 mg/L	0.004 mg/L	105	70.0	130	----
		Calcium, total	7440-70-2	E420	4.10 mg/L	4 mg/L	102	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0436 mg/L	0.04 mg/L	109	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0215 mg/L	0.02 mg/L	108	70.0	130	----
		Copper, total	7440-50-8	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		Iron, total	7439-89-6	E420	2.09 mg/L	2 mg/L	105	70.0	130	----
		Lead, total	7439-92-1	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		Lithium, total	7439-93-2	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0431 mg/L	0.04 mg/L	108	70.0	130	----
		Phosphorus, total	7723-14-0	E420	10.2 mg/L	10 mg/L	102	70.0	130	----
		Potassium, total	7440-09-7	E420	4.08 mg/L	4 mg/L	102	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0459 mg/L	0.04 mg/L	115	70.0	130	----
		Silicon, total	7440-21-3	E420	10.7 mg/L	10 mg/L	107	70.0	130	----
		Silver, total	7440-22-4	E420	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		Sodium, total	7440-23-5	E420	2.12 mg/L	2 mg/L	106	70.0	130	----
		Strontium, total	7440-24-6	E420	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 887671) - continued										
WP2303966-010	QC01	Sulfur, total	7704-34-9	E420	21.7 mg/L	20 mg/L	108	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00399 mg/L	0.004 mg/L	99.8	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		Tin, total	7440-31-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00410 mg/L	0.004 mg/L	103	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		Zinc, total	7440-66-6	E420	0.416 mg/L	0.4 mg/L	104	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
Dissolved Metals (QCLot: 885956)										
WP2303950-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.193 mg/L	0.2 mg/L	96.5	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00844 mg/L	0.01 mg/L	84.4	70.0	130	----
		Boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00382 mg/L	0.004 mg/L	95.5	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0100 mg/L	0.01 mg/L	100	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Copper, dissolved	7440-50-8	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	97.1	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0176 mg/L	0.02 mg/L	87.8	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0373 mg/L	0.04 mg/L	93.3	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.3 mg/L	10 mg/L	103	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 885956) - continued										
WP2303950-001	Anonymous	Selenium, dissolved	7782-49-2	E421	0.0460 mg/L	0.04 mg/L	115	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	9.80 mg/L	10 mg/L	98.0	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00358 mg/L	0.004 mg/L	89.5	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00354 mg/L	0.004 mg/L	88.5	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0209 mg/L	0.02 mg/L	105	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0426 mg/L	0.04 mg/L	106	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00385 mg/L	0.004 mg/L	96.4	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.369 mg/L	0.4 mg/L	92.2	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0427 mg/L	0.04 mg/L	107	70.0	130	----
Speciated Metals (QCLot: 887736)										
WP2303966-001	AQM28	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 22

Page 1 of 2

Environmental Division Winnipeg
Work Order Reference
WP2303966

Telephone : +1 204 255 9720

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Reque
Company:	Stantec Consulting	Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)	☑ Routine [R] if received by 3pm M-F - no surcharge
Contact:	Karen Mathers	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush sur
Phone:	204-928-7621	☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush su
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush su
Street:	500 - 311 Portage Ave	Email 1 or Fax Karen.Mathers@Stantec.com	☐ 1 day [E] if received by 3pm M-F - 100% rush su
City/Province:	Winnipeg, MB	Email 2 brad.heinz@stantec.com	☐ Same day [E2] if received by 10am M-S - 200% r
Postal Code:	R3B 2B9	Email 3 jeremy.jackson@stantec.com	Additional fees may apply to rush requests
Invoice To	Same as Report To ☐ YES ☑ NO	Invoice Recipients	Date and Time Required for all E&P TATs:
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	For all tests with rush TATs requested, please contact your AM to confirm availability.
Company:	Alamos Gold	Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q88846	AFE/Cost Center:	PO#
Job #:	ALAMOS	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (ALS use only):		ALS Contact: JD	Sampler: BG, AR

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	HG-D-U-CVAF-VA	HG-T-U-CVAF-VA	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	MEHG-D-GCAF-VA, MEHG-T-GCAF	CN-TL, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
1	AQM86	28-03-23	0930	W	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
2	AQM89C		1009																			
3	AQM71		1047																			
4	AQM72		1117																			
5	AQM73		1154																			
6	AQF41		1310																			
7	AQF45		1345																			
8	AQF44		1416																			
9	AQF43		1439																			
10	QC-01		—																			
11	AQF75	29-03-23	0851																			
12	AQF70	↓	0904	↓																		

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	All dissolved bottles field filtered
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
9.9					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: B. Heinz	Date: March 30/23	Time: 0930	Received by: JD	Date: APR 03 2023	Time: 11:20	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 2 of 3

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Karen.Mathers@Stantec.com

Email 2:

Email 3: See page 1

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax:

Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information

ALS Account # / Quote #:	Q88846
Job #:	ALAMOS
PO / AFE:	
LSD:	
ALS Lab Work Order # (ALS use only):	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: JD	Sampler: BE, AR

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	ALK-SPEC-WP, ACY-TITR-TB	ANIONS-6-L-IC-WP	C-DOC-HTC-WP, C-TOC-HTC-WP	HG-D-U-CVAF-VA	HG-T-U-CVAF-VA	MET-D-CCMS-WP, HARDNESS	MET-T-CCMS-WP	NH3-COL-WP	P-T-COL-WP	N-TOTKJ-WP	SOLIDS-TOTSUS-LR-WP	MEHG-D-GCAF-VA, MEHG-T-GCAF	CN-TL, CN-FREE-L, CN-WAD-L	CR-CR6-PWQO-IC-WT	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
13	AQF38	29-03-23	0932	W	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
14	AQF46		0956																			
15	AQF42		1016																			
16	AQF40		1053																			
17	FIELD BLANK		1205																			
18	TRIP BLANK	—	—																			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

See page 1

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
9.9					

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
B Lyer	March 30/23	0900

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
JD	APR 03 2023	11:20

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACKPAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

CERTIFICATE OF ANALYSIS

Work Order	: **WP2305502**	Page	: 1 of 18
Client	: **Alamos Gold Inc.**	Laboratory	: Winnipeg - Environmental
Contact	: Karen Mathers	Account Manager	: Judy Dalmaijer
Address	: PO Box 580 Lynn Lake MB Canada R0B 0W0	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg MB Canada R2J 3T4
Telephone	: 416 368 9932	Telephone	: +1 204 255 9720
Project	: ALAMOS	Date Samples Received	: 20-Apr-2023 11:03
PO	: ----	Date Analysis Commenced	: 21-Apr-2023
C-O-C number	: ----	Issue Date	: 27-Apr-2023 16:02
Sampler	: ----		
Site	: ----		
Quote number	: ALAMOS Gold Inc. - (Q88846)_V2		
No. of samples received	: 17		
No. of samples analysed	: 17		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Lee McTavish		Inorganics, Winnipeg, Manitoba
Lee McTavish		Metals, Winnipeg, Manitoba
Oleksandr Busel		Inorganics, Winnipeg, Manitoba
Oleksandr Busel		Metals, Winnipeg, Manitoba
Walt Kippenhuck	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Metals, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

13 fractions not received at laboratory, but requested on Chain of Custody / analytical request form.

Qualifiers

Qualifier	*Description*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM71	AQM72	AQM73	AQM28	AQM29C
					Client sampling date / time	18-Apr-2023 13:52	18-Apr-2023 13:38	18-Apr-2023 13:25	18-Apr-2023 12:51	18-Apr-2023 13:05
						WP2305502-001	WP2305502-002	WP2305502-003	WP2305502-004	WP2305502-005
						Result	Result	Result	Result	Result
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		3.8	3.9	9.7	3.0	<2.0
Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L		46.1	5.8	7.4	14.5	9.5
Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		46.1	5.8	7.4	14.5	9.5
Conductivity	----	E100	1.0	µS/cm		113	19.2	32.4	73.2	30.6
Hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		45.9	6.66	14.3	27.6	10.7
pH	----	E108	0.10	pH units		7.38	6.41	6.15	7.06	6.98
Solids, total dissolved [TDS]	----	E162-L	3.0	mg/L		88.8	32.0	75.0	72.5	32.2
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		6.0	8.2	3.7	2.4	1.9
Turbidity	----	E121	0.10	NTU		5.28	5.09	1.84	3.70	3.70
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		0.252	<0.010	0.027	0.011	<0.010
Bromide	24959-67-9	E235.Br-T	0.010	mg/L		0.013	<0.010	<0.010	<0.010	<0.010
Chloride	16887-00-6	E235.Cl-L	0.10	mg/L		1.57	0.44	0.64	1.23	0.47
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.034	0.027	0.021	0.060	0.062
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.89	0.46	0.98	0.37	0.27
Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0390	0.0058	<0.0050	0.112	0.0679
Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0016	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0386	0.0423	0.0695	0.0272	0.0179
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		4.42	<0.30	0.47	12.7	2.18
Cyanides										
Cyanide, free	----	E339-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, strong acid dissociable (Total)	----	E333-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, weak acid dissociable	----	E336-L	0.0010	mg/L		<0.0010	<0.0010	0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		18.0	14.0	35.6	14.6	9.75
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		17.7	14.8	34.2	14.4	8.78

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM71	AQM72	AQM73	AQM28	AQM29C
					Client sampling date / time	18-Apr-2023 13:52	18-Apr-2023 13:38	18-Apr-2023 13:25	18-Apr-2023 12:51	18-Apr-2023 13:05
						WP2305502-001	WP2305502-002	WP2305502-003	WP2305502-004	WP2305502-005
						Result	Result	Result	Result	Result
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0736	0.124	0.0859	0.217	0.0649
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00034	0.00029	0.00056	0.00035	0.00022
Barium, total	7440-39-3	E420	0.00010	mg/L		0.0116 RRV	0.00664 RRV	0.00725 RRV	0.0106 RRV	0.00716 RRV
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000079	0.0000084	0.0000352	0.0000328	0.0000205
Calcium, total	7440-70-2	E420	0.050	mg/L		14.5	2.01	4.24	8.00	3.22
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	0.000043	<0.000010	<0.000010
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050 RRV	<0.00050	<0.00050	0.00060	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00016	0.00015	0.00060	0.00134	0.00019
Copper, total	7440-50-8	E420	0.00050	mg/L		0.00064	<0.00050	0.00103	0.00649	0.00124
Iron, total	7439-89-6	E420	0.010	mg/L		0.976	1.83	1.19	1.30	0.416
Lead, total	7439-92-1	E420	0.000050	mg/L		0.000053	0.000071	0.000114	0.000109	0.000081
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0010	<0.0010	<0.0010	0.0011	0.0011
Magnesium, total	7439-95-4	E420	0.0050	mg/L		2.25	0.554	1.08	1.90	0.890
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.0951	0.0495	0.282	0.0783	0.0224
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000122	0.000060	0.000115	0.000078	<0.000050
Nickel, total	7440-02-0	E420	0.00050	mg/L		0.00052	<0.00050	0.00064	0.0600	0.00646
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	0.071	<0.050	<0.050
Potassium, total	7440-09-7	E420	0.050	mg/L		2.42	1.14	1.82	1.06	0.705
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00217	0.00186	0.00234	0.00120	0.00116
Selenium, total	7782-49-2	E420	0.000050	mg/L		0.000220	0.000302	0.000186	0.000186	0.000181
Silicon, total	7440-21-3	E420	0.10	mg/L		6.34	2.60	3.56	3.80	3.19
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		2.16	0.800	2.57	1.75	1.22
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0252	0.00617	0.0103	0.0252	0.0136
Sulfur, total	7704-34-9	E420	0.50	mg/L		1.64	<0.50	<0.50	4.21	0.78
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM71	AQM72	AQM73	AQM28	AQM29C
					Client sampling date / time	18-Apr-2023 13:52	18-Apr-2023 13:38	18-Apr-2023 13:25	18-Apr-2023 12:51	18-Apr-2023 13:05
						WP2305502-001	WP2305502-002	WP2305502-003	WP2305502-004	WP2305502-005
						Result	Result	Result	Result	Result
Total Metals										
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6	E420	0.00030	mg/L		0.00223	0.00342	0.00140	0.00339	0.00232
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.000020	0.000017	<0.000010	0.000030	0.000023
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	0.0035	0.0084	0.0141	0.0049
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0266	0.0599	0.0725	0.109	0.0198
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00022	0.00013	0.00046	0.00021	0.00014
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0108	0.0186	0.0200	0.0219	0.0128
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	0.0000063	0.0000274	0.0000212	<0.0000050
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		14.8	1.78	4.00	8.00	2.92
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	0.000044	<0.000010	<0.000010
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00014	0.00011	0.00055	0.00101	0.00012
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00049	0.00203	0.00241	0.00518	0.00346
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.300	0.759	0.934	0.849	0.191
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	0.000084	0.000139	0.000110	0.000143
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0011	<0.0010	<0.0010	0.0011	0.0011
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		2.17	0.537	1.04	1.86	0.832
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0838	0.0489	0.247	0.0687	0.0154
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000116	0.000054	0.000115	0.000058	0.000052
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	0.00065	0.0550	0.00579

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQM71	AQM72	AQM73	AQM28	AQM29C
					Client sampling date / time	18-Apr-2023 13:52	18-Apr-2023 13:38	18-Apr-2023 13:25	18-Apr-2023 12:51	18-Apr-2023 13:05
						WP2305502-001	WP2305502-002	WP2305502-003	WP2305502-004	WP2305502-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		2.42	1.26	1.79	1.09	0.670
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00214	0.00200	0.00237	0.00118	0.00108
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.48	1.88	3.22	3.57	3.08
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.94	0.544	1.02	1.84	1.24
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0256	0.00582	0.0102	0.0245	0.0128
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1.88	<0.50	0.56	3.98	0.79
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	0.00012	0.00014	0.00012	<0.00010
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00073	0.00126	0.00087	0.00080	<0.00030
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000015	0.000013	<0.000010	0.000020	0.000016
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0017	0.0046	0.0099	0.0133	0.0037
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		0.00121	0.00064	<0.00050	<0.00050	<0.00050

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF40	AQF41	AQF42	AQF43	AQF44
					Client sampling date / time	18-Apr-2023 10:06	18-Apr-2023 10:26	18-Apr-2023 08:54	18-Apr-2023 09:08	18-Apr-2023 09:34
						WP2305502-006	WP2305502-007	WP2305502-008	WP2305502-009	WP2305502-010
						Result	Result	Result	Result	Result
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	2.7	<2.0	2.3	2.3
Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L		11.7	11.6	11.7	11.8	12.3
Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		11.7	11.6	11.7	11.8	12.3
Conductivity	----	E100	1.0	µS/cm		30.3	30.1	29.9	30.1	31.7
Hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		11.5	11.3	11.7	11.5	12.7
pH	----	E108	0.10	pH units		6.99	6.97	6.98	7.01	7.01
Solids, total dissolved [TDS]	----	E162-L	3.0	mg/L		32.2	30.0	28.2	33.4	31.4
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Turbidity	----	E121	0.10	NTU		1.22	0.85	0.90	0.92	0.85
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		<0.010	<0.010	0.012	<0.010	<0.010
Bromide	24959-67-9	E235.Br-T	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Chloride	16887-00-6	E235.Cl-L	0.10	mg/L		0.26	0.24	0.26	0.24	0.26
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.077	0.076	0.073	0.076	0.075
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.24	0.25	0.35	0.25	0.28
Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0992	0.100	0.0962	0.0975	0.0989
Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0124	0.0117	0.0303	0.0123	0.0155
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		0.66	0.66	0.64	0.65	0.73
Cyanides										
Cyanide, free	----	E339-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, strong acid dissociable (Total)	----	E333-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, weak acid dissociable	----	E336-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		9.96	9.66	9.80	9.61	9.80
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		9.17	9.54	9.66	9.16	9.54
Total Metals										

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF40	AQF41	AQF42	AQF43	AQF44
					Client sampling date / time	18-Apr-2023 10:06	18-Apr-2023 10:26	18-Apr-2023 08:54	18-Apr-2023 09:08	18-Apr-2023 09:34
						WP2305502-006	WP2305502-007	WP2305502-008	WP2305502-009	WP2305502-010
						Result	Result	Result	Result	Result
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0342	0.0331	0.0381	0.0368	0.0369
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00023	0.00022	0.00024	0.00023	0.00021
Barium, total	7440-39-3	E420	0.00010	mg/L		0.00657 RRV	0.00669 RRV	0.00745 RRV	0.00674 RRV	0.00699 RRV
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000087	<0.0000050	0.0000103	0.0000081	<0.0000050
Calcium, total	7440-70-2	E420	0.050	mg/L		3.13	3.21	3.28	3.26	3.40
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	0.00093	<0.00050	<0.00050
Iron, total	7439-89-6	E420	0.010	mg/L		0.274	0.279	0.287	0.277	0.271
Lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050 RRV	<0.000050	0.000072	<0.000050	<0.000050
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0011	0.0011	0.0011	0.0011	0.0011
Magnesium, total	7439-95-4	E420	0.0050	mg/L		0.936	0.950	0.969	0.959	1.01
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.0124	0.0132	0.0149	0.0140	0.0133
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000060	0.000051	0.000084	0.000069	0.000076
Nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7	E420	0.050	mg/L		0.595	0.587	0.607	0.586	0.584
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00111	0.00108	0.00108	0.00112	0.00106
Selenium, total	7782-49-2	E420	0.000050	mg/L		0.000132	0.000157	0.000132	0.000092	0.000067
Silicon, total	7440-21-3	E420	0.10	mg/L		3.09	3.12	2.96	2.99	2.96
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		1.25	1.26	1.27 RRV	1.21	1.29
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0145	0.0142	0.0145	0.0142	0.0145
Sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF40	AQF41	AQF42	AQF43	AQF44
					Client sampling date / time	18-Apr-2023 10:06	18-Apr-2023 10:26	18-Apr-2023 08:54	18-Apr-2023 09:08	18-Apr-2023 09:34
						WP2305502-006	WP2305502-007	WP2305502-008	WP2305502-009	WP2305502-010
						Result	Result	Result	Result	Result
Total Metals										
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6	E420	0.00030	mg/L		0.00079	0.00077	0.00126	0.00109	0.00096
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.000023	0.000025	0.000056	0.000027	0.000027
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	0.0032	<0.0030	<0.0030
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0206	0.0204	0.0240	0.0198	0.0198
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00017	0.00015	0.00018	0.00015	0.00017
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0195	0.0199	0.0191	0.0202	0.0184
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000105	<0.0000050	0.0000120	<0.0000050	<0.0000050
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		3.09	3.03	3.16	3.12	3.46
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00205	0.00174	0.00253	0.00193	0.00179
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.181	0.192	0.190	0.185	0.183
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000106	0.000082	0.000089	0.000066	0.000072
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0011	0.0011	0.0012	0.0011	0.0012
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		0.914	0.904	0.924	0.895	0.982
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00971	0.0107	0.0124	0.0109	0.0104
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000057	0.000067	0.000077	0.000058	0.000072
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	AQF40	AQF41	AQF42	AQF43	AQF44
					Client sampling date / time	18-Apr-2023 10:06	18-Apr-2023 10:26	18-Apr-2023 08:54	18-Apr-2023 09:08	18-Apr-2023 09:34
Analyte	CAS Number	Method	LOR	Unit		WP2305502-006	WP2305502-007	WP2305502-008	WP2305502-009	WP2305502-010
						Result	Result	Result	Result	Result
Dissolved Metals										
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.677	0.576	0.616	0.564	0.597
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00115	0.00109	0.00102	0.00100	0.00106
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.02	3.02	2.95	2.94	2.94
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.28	1.21	5.15	1.23	1.71
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0140	0.0140	0.0138	0.0143	0.0146
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	0.75	<0.50	<0.50
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00014	0.00012	0.00015	0.00013	0.00012
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	0.00036	0.00035	0.00031	<0.00030
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000022	0.000022	0.000052	0.000020	0.000022
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0028	0.0022	0.0052	0.0023	0.0028
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF45	AQF46	AQF7S	AQF38	QC-01
					Client sampling date / time	18-Apr-2023 09:49	18-Apr-2023 11:28	18-Apr-2023 11:43	18-Apr-2023 10:47	18-Apr-2023
						WP2305502-011	WP2305502-012	WP2305502-013	WP2305502-014	WP2305502-015
						Result	Result	Result	Result	Result
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	8.7	<2.0	3.1	3.7
Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L		13.1	39.2	16.9	84.5	84.0
Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		13.1	39.2	16.9	84.5	84.0
Conductivity	----	E100	1.0	µS/cm		35.2	84.0	40.0	177	177
Hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		13.3	35.1	17.7	84.6	80.9
pH	----	E108	0.10	pH units		7.05	7.01	7.21	7.73	7.73
Solids, total dissolved [TDS]	----	E162-L	3.0	mg/L		31.2	65.2	30.2	162	85.5
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		<1.0	<1.0	<1.0	2.7	3.5
Turbidity	----	E121	0.10	NTU		1.04	1.09	0.25	1.49	1.67
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		<0.010	0.237	<0.010	0.051	0.056
Bromide	24959-67-9	E235.Br-T	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
Chloride	16887-00-6	E235.Cl-L	0.10	mg/L		0.46	0.29	0.12	0.61	0.66
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.076	0.049	0.047	0.237	0.234
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		0.27	0.74	0.30	1.32	1.40
Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0980	0.0682	0.0626	0.0588	0.0597
Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0134	0.0161	0.0074	0.0162	0.0200
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		1.01	0.43	0.81	0.55	0.57
Cyanides										
Cyanide, free	----	E339-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	0.0010
Cyanide, strong acid dissociable (Total)	----	E333-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, weak acid dissociable	----	E336-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		9.73	13.4	10.7	41.0	43.7
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		9.55	13.2	9.67	40.4	41.4
Total Metals										

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF45	AQF46	AQF7S	AQF38	QC-01
					Client sampling date / time	18-Apr-2023 09:49	18-Apr-2023 11:28	18-Apr-2023 11:43	18-Apr-2023 10:47	18-Apr-2023
						WP2305502-011	WP2305502-012	WP2305502-013	WP2305502-014	WP2305502-015
						Result	Result	Result	Result	Result
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0425	0.0244	0.0219	0.0360	0.0393
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	0.00033	<0.00010	<0.00010
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00021	0.00032	0.00034	0.00090	0.00088
Barium, total	7440-39-3	E420	0.00010	mg/L		0.00701 RRV	0.0126	0.00868	0.0307	0.0302
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	0.016	0.017
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000059	0.0000053	0.0000135	0.0000281	0.0000251
Calcium, total	7440-70-2	E420	0.050	mg/L		3.68	10.8	4.47	22.6	22.2
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total	7440-50-8	E420	0.00050	mg/L		0.00088	<0.00050	<0.00050	0.00070	0.00075
Iron, total	7439-89-6	E420	0.010	mg/L		0.273	0.460	0.051	0.181	0.179
Lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	0.000057	0.000069
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0011	<0.0010	<0.0010	0.0031	0.0032
Magnesium, total	7439-95-4	E420	0.0050	mg/L		1.08	2.18	1.62	7.17	7.44
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.0168	0.118	0.00266	0.0660	0.0660
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000063	0.000054	0.000076	0.00853	0.00839
Nickel, total	7440-02-0	E420	0.00050	mg/L		0.00106	<0.00050	<0.00050	<0.00050	0.00057
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7	E420	0.050	mg/L		0.642	0.876	0.567	2.34	2.30
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00106	0.00112	0.00108	0.00346	0.00328
Selenium, total	7782-49-2	E420	0.000050	mg/L		0.000104	0.000078	0.000089	0.000219	0.000173
Silicon, total	7440-21-3	E420	0.10	mg/L		3.10	1.62	0.98	4.18	4.21
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		1.41	1.37	1.14 RRV	5.78	5.76
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.0150	0.0200	0.0135	0.0605	0.0594
Sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	<0.50	0.73	0.65
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF45	AQF46	AQF7S	AQF38	QC-01
					Client sampling date / time	18-Apr-2023 09:49	18-Apr-2023 11:28	18-Apr-2023 11:43	18-Apr-2023 10:47	18-Apr-2023
						WP2305502-011	WP2305502-012	WP2305502-013	WP2305502-014	WP2305502-015
						Result	Result	Result	Result	Result
Total Metals										
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6	E420	0.00030	mg/L		0.00130	0.00056	0.00061	0.00124	0.00127
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.000030	<0.000010	0.000010	0.000041	0.000041
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	0.0031	0.0055	0.0055
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0185	0.0145	0.0182	0.0041	0.0046
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00015	0.00029	0.00027	0.00077	0.00082
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0135	0.0233	0.00794	0.0281	0.0280
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	0.016	0.014
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	0.0000075	0.0000209	0.0000263
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		3.58	10.4	4.46	22.3	20.5
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00260	0.00163	0.00040	0.00060	0.00060
Iron, dissolved	7439-89-6	E421	0.010	mg/L		0.180	0.324	0.036	0.064	0.065
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000084	0.000062	<0.000050	<0.000050	<0.000050
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0012	0.0010	<0.0010	0.0033	0.0031
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		1.05	2.21	1.60	7.02	7.22
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0140	0.104	0.00211	0.0405	0.0422
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000081	0.000059	0.000076	0.00830	0.00787
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00115	<0.00050	<0.00050	<0.00050	<0.00050

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	AQF45	AQF46	AQF7S	AQF38	QC-01
					Client sampling date / time	18-Apr-2023 09:49	18-Apr-2023 11:28	18-Apr-2023 11:43	18-Apr-2023 10:47	18-Apr-2023
						WP2305502-011	WP2305502-012	WP2305502-013	WP2305502-014	WP2305502-015
						Result	Result	Result	Result	Result
Dissolved Metals										
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		0.639	0.892	0.575	2.33	2.33
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00104	0.00114	0.00102	0.00339	0.00354
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	0.000119	0.000105
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.99	1.58	0.929	3.70	3.72
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.40	1.32	1.68	5.61	5.50
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0152	0.0199	0.0135	0.0619	0.0595
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	<0.50	0.69	0.91
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	0.00011	0.00012	<0.00010	<0.00010
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000024	<0.000010	<0.000010	0.000039	0.000036
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0016	0.0024	0.0017	0.0040	0.0041
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	TRIP BLANK	FIELD BLANK	----	----	----
					Client sampling date / time	18-Apr-2023	18-Apr-2023 14:50	----	----	----
Analyte	CAS Number	Method	LOR	Unit		WP2305502-016	WP2305502-017	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
Acidity (as CaCO3)	----	E283	2.0	mg/L		<2.0	<2.0	----	----	----
Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	----	----	----
Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	----	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	----	----	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	----	----	----
Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		<1.0	<1.0	----	----	----
Conductivity	----	E100	1.0	µS/cm		<1.0	<1.0	----	----	----
Hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		<0.50	<0.50	----	----	----
pH	----	E108	0.10	pH units		5.55	5.46	----	----	----
Solids, total dissolved [TDS]	----	E162-L	3.0	mg/L		<3.0	4.4	----	----	----
Solids, total suspended [TSS]	----	E160-L	1.0	mg/L		<1.0	<1.0	----	----	----
Turbidity	----	E121	0.10	NTU		<0.10	<0.10	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L		0.071	<0.010	----	----	----
Bromide	24959-67-9	E235.Br-T	0.010	mg/L		<0.010	<0.010	----	----	----
Chloride	16887-00-6	E235.Cl-L	0.10	mg/L		<0.10	<0.10	----	----	----
Fluoride	16984-48-8	E235.F	0.020	mg/L		<0.020	<0.020	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L		<0.15	<0.15	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		<0.0050	<0.0050	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		<0.0020	<0.0020	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		<0.30	<0.30	----	----	----
Cyanides										
Cyanide, free	----	E339-L	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Cyanide, strong acid dissociable (Total)	----	E333-L	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Cyanide, weak acid dissociable	----	E336-L	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		<0.50	0.80	----	----	----
Carbon, total organic [TOC]	----	E355-L	0.50	mg/L		<0.50	0.57	----	----	----
Total Metals										

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TRIP BLANK	FIELD BLANK	----	----	----
					Client sampling date / time	18-Apr-2023	18-Apr-2023 14:50	----	----	----
						WP2305502-016	WP2305502-017	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		<0.0030	<0.0030	----	----	----
Antimony, total	7440-36-0	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Arsenic, total	7440-38-2	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Barium, total	7440-39-3	E420	0.00010	mg/L		<0.00010	<0.00010 RRV	----	----	----
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	----	----	----
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Calcium, total	7440-70-2	E420	0.050	mg/L		<0.050	<0.050	----	----	----
Cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Copper, total	7440-50-8	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Iron, total	7439-89-6	E420	0.010	mg/L		<0.010	<0.010	----	----	----
Lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Lithium, total	7439-93-2	E420	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Magnesium, total	7439-95-4	E420	0.0050	mg/L		<0.0050	<0.0050	----	----	----
Manganese, total	7439-96-5	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Nickel, total	7440-02-0	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	----	----	----
Potassium, total	7440-09-7	E420	0.050	mg/L		<0.050	<0.050	----	----	----
Rubidium, total	7440-17-7	E420	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Silicon, total	7440-21-3	E420	0.10	mg/L		<0.10	<0.10	----	----	----
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Sodium, total	7440-23-5	E420	0.050	mg/L		<0.050	<0.050	----	----	----
Strontium, total	7440-24-6	E420	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	<0.50	----	----	----
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	TRIP BLANK	FIELD BLANK	----	----	----
					Client sampling date / time	18-Apr-2023	18-Apr-2023 14:50	----	----	----
Analyte	CAS Number	Method	LOR	Unit		WP2305502-016	WP2305502-017	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
Thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	----	----	----
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Uranium, total	7440-61-1	E420	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	<0.0030	----	----	----
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		<0.00010	0.00383	----	----	----
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		<0.050	<0.050	----	----	----
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	0.00125	----	----	----
Iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	<0.010	----	----	----
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		<0.0050	<0.0050	----	----	----
Manganese, dissolved	7439-96-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: TRIP BLANK	FIELD BLANK	----	----	----
					Client sampling date / time: 18-Apr-2023	18-Apr-2023 14:50	----	----	----
					WP2305502-016	WP2305502-017	--------	--------	--------
					Result	Result	----	----	----
Dissolved Metals									
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	----	----	----
Potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	----	----	----
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
Silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	----	----	----
Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
Sodium, dissolved	7440-23-5	E421	0.050	mg/L	<0.050	<0.050	----	----	----
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	----	----	----
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	0.00011	----	----	----
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----
Dissolved metals filtration location	----	EP421	-	-	Laboratory	Field	----	----	----
Speciated Metals									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WP2305502**	Page	: 1 of 56
Client	: **Alamos Gold Inc.**	Laboratory	: Winnipeg - Environmental
Contact	: Karen Mathers	Account Manager	: Judy Dalmaijer
Address	: PO Box 580 Lynn Lake MB Canada R0B 0W0	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	: 416 368 9932	Telephone	: +1 204 255 9720
Project	: ALAMOS	Date Samples Received	: 20-Apr-2023 11:03
PO	: ----	Issue Date	: 27-Apr-2023 16:02
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: ALAMOS Gold Inc. - (Q88846)_V2		
No. of samples received	: 17		
No. of samples analysed	: 17		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Total Metals	QC-908147-001	----	Antimony, total	7440-36-0	E420	0.00012 B mg/L	0.0001 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF38	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF40	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF41	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF42	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF43	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF44	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF45	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF46	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQF7S	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM28	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM29C	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM71	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM72	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) AQM73	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) FIELD BLANK	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) QC-01	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid)										
TRIP BLANK	E303	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE										
AQF38	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE										
AQF40	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE										
AQF41	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE										
AQF42	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE										
AQF43	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE										
AQF44	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE										
AQF45	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE										
AQF46	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE AQF7S	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE AQM28	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE AQM29C	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE AQM71	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE AQM72	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE AQM73	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE FIELD BLANK	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE QC-01	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE TRIP BLANK	E235.Br-T	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF38	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF40	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF41	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF42	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF43	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF44	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF45	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF46	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQF7S	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQM28	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQM29C	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQM71	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQM72	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE AQM73	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE FIELD BLANK	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE QC-01	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE TRIP BLANK	E235.Cl-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF38	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF40	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF41	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF42	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF43	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF44	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF45	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF46	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQF7S	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM28	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM29C	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM71	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM72	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE AQM73	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE FIELD BLANK	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE QC-01	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE TRIP BLANK	E235.F	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQF38	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQF40	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQF41	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQF42	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQF43	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQF44	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQF45	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQF46	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQF7S	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQM28	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQM29C	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQM71	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQM72	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE AQM73	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE FIELD BLANK	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE QC-01	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE TRIP BLANK	E235.NO3-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	4 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQF38	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQF40	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQF41	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQF42	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQF43	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQF44	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQF45	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQF46	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQF7S	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQM28	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQM29C	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQM71	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQM72	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE AQM73	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE FIELD BLANK	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE QC-01	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	4 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE TRIP BLANK	E235.NO2-L	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	3 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF38	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF40	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF41	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF42	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF43	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF44	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF45	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF46	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQF7S	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM28	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM29C	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM71	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM72	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE AQM73	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE FIELD BLANK	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE QC-01	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE TRIP BLANK	E235.SO4	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF38	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF40	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF41	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF42	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF43	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF44	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF45	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF46	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQF7S	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM28	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM29C	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM71	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM72	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) AQM73	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
FIELD BLANK	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
QC-01	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
TRIP BLANK	E319	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
AQF38	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
AQF40	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
AQF41	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
AQF42	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
AQF43	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
AQF44	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) AQF45	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) AQF46	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) AQF7S	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) AQM28	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) AQM29C	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) AQM71	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) AQM72	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) AQM73	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) FIELD BLANK	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) QC-01	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) TRIP BLANK	E372-U	18-Apr-2023	24-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF40	E339-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	14 days	6 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF42	E339-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	14 days	6 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF44	E339-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	14 days	6 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF45	E339-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	14 days	6 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF38	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF41	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF43	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF46	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF7S	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM28	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM29C	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM71	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM72	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM73	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) FIELD BLANK	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) QC-01	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Free Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide)										
TRIP BLANK	E339-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	8 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF40	E333-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	14 days	6 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF42	E333-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	14 days	6 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF44	E333-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	14 days	6 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF45	E333-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	14 days	6 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF38	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF41	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF43	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide)										
AQF46	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF7S	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM28	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM29C	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM71	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM72	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM73	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) FIELD BLANK	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) QC-01	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	8 days	✓
Cyanides : Total Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) TRIP BLANK	E333-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF40	E336-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	14 days	6 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF42	E336-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	14 days	6 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF44	E336-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	14 days	6 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF45	E336-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	14 days	6 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF38	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF41	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF43	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF46	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQF7S	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM28	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM29C	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM71	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM72	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) AQM73	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) FIELD BLANK	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	7 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) QC-01	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	8 days	✓
Cyanides : WAD Cyanide (Low Level)										
UV-inhibited HDPE - total (sodium hydroxide) TRIP BLANK	E336-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	14 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF38	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF40	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF41	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF42	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF43	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF44	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF45	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF46	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQF7S	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM28	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM29C	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM71	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM72	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) AQM73	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) FIELD BLANK	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) QC-01	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) TRIP BLANK	E421	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF38	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF40	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF41	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF42	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF43	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF44	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF45	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF46	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQF7S	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM28	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM29C	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM71	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM72	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) AQM73	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) FIELD BLANK	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) QC-01	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) TRIP BLANK	E358-L	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF38	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF40	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF41	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF42	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF43	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF44	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF45	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF46	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQF7S	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM28	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM29C	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM71	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM72	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) AQM73	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) FIELD BLANK	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) QC-01	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) TRIP BLANK	E355-L	18-Apr-2023	25-Apr-2023	----	----		25-Apr-2023	28 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF38	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF40	E283	18-Apr-2023	24-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF41	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF42	E283	18-Apr-2023	24-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE AQF43	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF44	E283	18-Apr-2023	24-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF45	E283	18-Apr-2023	24-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF46	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQF7S	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM28	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM29C	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM71	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE AQM72	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE AQM73	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE FIELD BLANK	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE QC-01	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	9 days	✓
Physical Tests : Acidity by Titration										
HDPE TRIP BLANK	E283	18-Apr-2023	25-Apr-2023	----	----		26-Apr-2023	14 days	9 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF38	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF40	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF41	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF42	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF43	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE AQF44	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF45	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF46	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQF7S	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM28	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM29C	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM71	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM72	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE AQM73	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE FIELD BLANK	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE QC-01	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE TRIP BLANK	E290	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	14 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE AQF38	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE AQF40	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE AQF41	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE AQF42	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE AQF43	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE AQF44	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE AQF45	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE AQF46	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE AQF7S	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE AQM28	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE AQM29C	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE AQM71	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE AQM72	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE AQM73	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE FIELD BLANK	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE QC-01	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE TRIP BLANK	E100	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	28 days	4 days	✓
Physical Tests : pH by Meter										
HDPE AQF38	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE AQF40	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE AQF41	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE AQF42	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE AQF43	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE AQF44	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE AQF45	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE AQF46	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE AQF7S	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE AQM28	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE AQM29C	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE AQM71	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE AQM72	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE AQM73	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE FIELD BLANK	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE QC-01	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE TRIP BLANK	E108	18-Apr-2023	21-Apr-2023	----	----		21-Apr-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQF38	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQF40	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQF41	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQF42	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQF43	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQF44	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQF45	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQF46	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQF7S	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQM28	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQM29C	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQM71	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQM72	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE AQM73	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE FIELD BLANK	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE QC-01	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TDS by Gravimetry (Low Level)										
HDPE TRIP BLANK	E162-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF38	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF40	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF41	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF42	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF43	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF44	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF45	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF46	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQF7S	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM28	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM29C	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM71	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM72	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] AQM73	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] FIELD BLANK	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] QC-01	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] TRIP BLANK	E160-L	18-Apr-2023	----	----	----		24-Apr-2023	7 days	6 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE AQF38	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE AQF40	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE AQF41	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE AQF42	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE AQF43	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE AQF44	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE AQF45	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE AQF46	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE AQF7S	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE AQM28	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE AQM29C	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE AQM71	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE AQM72	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE AQM73	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE FIELD BLANK	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE QC-01	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	4 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE TRIP BLANK	E121	18-Apr-2023	----	----	----		21-Apr-2023	3 days	4 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF40	E532	18-Apr-2023	----	----	----		24-Apr-2023	28 days	6 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF42	E532	18-Apr-2023	----	----	----		24-Apr-2023	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF44	E532	18-Apr-2023	----	----	----		24-Apr-2023	28 days	6 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF45	E532	18-Apr-2023	----	----	----		24-Apr-2023	28 days	6 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF38	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF41	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF43	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF46	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQF7S	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM28	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM29C	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM71	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM72	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) AQM73	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) FIELD BLANK	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) QC-01	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	8 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) TRIP BLANK	E532	18-Apr-2023	----	----	----		25-Apr-2023	28 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF38	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF40	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF41	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF42	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF43	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF44	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF45	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF46	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQF7S	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM28	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM29C	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM71	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM72	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) AQM73	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) FIELD BLANK	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) QC-01	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) TRIP BLANK	E420	18-Apr-2023	24-Apr-2023	----	----		24-Apr-2023	180 days	6 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	908756	2	31	6.4	5.0	✓
Alkalinity Species by Titration	E290	906387	1	18	5.5	5.0	✓
Ammonia in Water by Colour	E303	906423	3	58	5.1	5.0	✓
Bromide in Water by IC (Trace level)	E235.Br-T	906107	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	906108	2	21	9.5	5.0	✓
Conductivity in Water	E100	906386	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	908152	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	908059	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	906106	3	37	8.1	5.0	✓
Free Cyanide (Low Level)	E339-L	908806	2	28	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	906110	3	32	9.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	906111	3	32	9.3	5.0	✓
pH by Meter	E108	906385	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	906109	3	35	8.5	5.0	✓
TDS by Gravimetry (Low Level)	E162-L	908085	1	17	5.8	5.0	✓
Total Cyanide (Low Level)	E333-L	908807	2	26	7.6	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	908101	2	22	9.0	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	908049	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	908147	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	909413	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	908595	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	908084	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	906406	1	20	5.0	5.0	✓
WAD Cyanide (Low Level)	E336-L	908808	2	23	8.7	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	908756	2	31	6.4	5.0	✓
Alkalinity Species by Titration	E290	906387	1	18	5.5	5.0	✓
Ammonia in Water by Colour	E303	906423	3	58	5.1	5.0	✓
Bromide in Water by IC (Trace level)	E235.Br-T	906107	3	17	17.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	906108	3	21	14.2	5.0	✓
Conductivity in Water	E100	906386	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	908152	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	908059	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	906106	3	37	8.1	5.0	✓
Free Cyanide (Low Level)	E339-L	908806	2	28	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	906110	3	32	9.3	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Nitrite in Water by IC (Low Level)	E235.NO2-L	906111	3	32	9.3	5.0	✓
pH by Meter	E108	906385	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	906109	3	35	8.5	5.0	✓
TDS by Gravimetry (Low Level)	E162-L	908085	1	17	5.8	5.0	✓
Total Cyanide (Low Level)	E333-L	908807	2	26	7.6	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	908101	2	22	9.0	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	908049	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	908147	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	909413	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	908595	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	908084	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	906406	1	20	5.0	5.0	✓
WAD Cyanide (Low Level)	E336-L	908808	2	23	8.7	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	908756	2	31	6.4	5.0	✓
Alkalinity Species by Titration	E290	906387	1	18	5.5	5.0	✓
Ammonia in Water by Colour	E303	906423	3	58	5.1	5.0	✓
Bromide in Water by IC (Trace level)	E235.Br-T	906107	3	17	17.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	906108	3	21	14.2	5.0	✓
Conductivity in Water	E100	906386	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	908152	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	908059	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	906106	3	37	8.1	5.0	✓
Free Cyanide (Low Level)	E339-L	908806	2	28	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	906110	3	32	9.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	906111	3	32	9.3	5.0	✓
Sulfate in Water by IC	E235.SO4	906109	3	35	8.5	5.0	✓
TDS by Gravimetry (Low Level)	E162-L	908085	1	17	5.8	5.0	✓
Total Cyanide (Low Level)	E333-L	908807	2	26	7.6	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	908101	2	22	9.0	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	908049	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	908147	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	909413	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	908595	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	908084	1	17	5.8	5.0	✓
Turbidity by Nephelometry	E121	906406	1	20	5.0	5.0	✓
WAD Cyanide (Low Level)	E336-L	908808	2	23	8.7	5.0	✓
Matrix Spikes (MS)							
Ammonia in Water by Colour	E303	906423	3	58	5.1	5.0	✓

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Bromide in Water by IC (Trace level)	E235.Br-T	906107	1	17	5.8	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	906108	2	21	9.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	908152	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	908059	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	906106	3	37	8.1	5.0	✓
Free Cyanide (Low Level)	E339-L	908806	2	28	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	906110	3	32	9.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	906111	3	32	9.3	5.0	✓
Sulfate in Water by IC	E235.SO4	906109	3	35	8.5	5.0	✓
Total Cyanide (Low Level)	E333-L	908807	2	26	7.6	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	908101	2	22	9.0	5.0	✓
Total Kjeldahl Nitrogen by Colourimetry	E319	908049	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	908147	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	909413	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	908595	1	20	5.0	5.0	✓
WAD Cyanide (Low Level)	E336-L	908808	2	23	8.7	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Winnipeg - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Winnipeg - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Winnipeg - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
TSS by Gravimetry (Low Level)	E160-L Winnipeg - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry (Low Level)	E162-L Winnipeg - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Trace level)	E235.Br-T Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Nitrate in Water by IC (Low Level)	E235.NO3-L Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Waterloo - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH endpoint of 8.3
Alkalinity Species by Titration	E290 Winnipeg - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia in Water by Colour	E303 Winnipeg - Environmental	Water	APHA 4500 NH3-NITROGEN (AMMONIA)	This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.
Total Kjeldahl Nitrogen by Colourimetry	E319 Winnipeg - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by colourimetric analysis.
Total Cyanide (Low Level)	E333-L Waterloo - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
WAD Cyanide (Low Level)	E336-L Waterloo - Environmental	Water	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Free Cyanide (Low Level)	E339-L Waterloo - Environmental	Water	ASTM D7237 (mod)	Free Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line gas diffusion followed by colourmetric analysis.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Winnipeg - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Winnipeg - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Winnipeg - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total metals in Water by CRC ICPMS	E420 Winnipeg - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 Winnipeg - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection. Results are based on an un-filtered, field-preserved sample.
Dissolved Hardness (Calculated)	EC100 Winnipeg - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Winnipeg - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Winnipeg - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Winnipeg - Environmental	Water		Preparation for Total Organic Carbon by Combustion

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Dissolved Organic Carbon for Combustion	EP358 Winnipeg - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Winnipeg - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Winnipeg - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **WP2305502**	Page	: 1 of 22
Client	: Alamos Gold Inc.	Laboratory	: Winnipeg - Environmental
Contact	: Karen Mathers	Account Manager	: Judy Dalmaijer
Address	: PO Box 580 Lynn Lake MB Canada R0B 0W0	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	:	Telephone	: +1 204 255 9720
Project	: ALAMOS	Date Samples Received	: 20-Apr-2023 11:03
PO	: ----	Date Analysis Commenced	: 21-Apr-2023
C-O-C number	: ----	Issue Date	: 27-Apr-2023 16:02
Sampler	: ---- 416 368 9932		
Site	: ----		
Quote number	: ALAMOS Gold Inc. - (Q88846)_V2		
No. of samples received	: 17		
No. of samples analysed	: 17		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Lee McTavish		Winnipeg Inorganics, Winnipeg, Manitoba
Lee McTavish		Winnipeg Metals, Winnipeg, Manitoba
Oleksandr Busel		Winnipeg Inorganics, Winnipeg, Manitoba
Oleksandr Busel		Winnipeg Metals, Winnipeg, Manitoba
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 906385)											
WP2305502-001	AQM71	pH	----	E108	0.10	pH units	7.38	7.40	0.271%	4%	----
Physical Tests (QC Lot: 906386)											
WP2305502-001	AQM71	Conductivity	----	E100	1.0	µS/cm	113	113	0.00%	10%	----
Physical Tests (QC Lot: 906387)											
WP2305502-001	AQM71	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	46.1	45.8	0.653%	20%	----
Physical Tests (QC Lot: 906406)											
WP2305502-001	AQM71	Turbidity	----	E121	0.10	NTU	5.28	5.04	4.65%	15%	----
Physical Tests (QC Lot: 908084)											
WP2305502-001	AQM71	Solids, total suspended [TSS]	----	E160-L	1.0	mg/L	6.0	6.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 908085)											
WP2305502-001	AQM71	Solids, total dissolved [TDS]	----	E162-L	10.0	mg/L	88.8	99.2	10.3	Diff <2x LOR	----
Physical Tests (QC Lot: 908756)											
WP2305331-003	Anonymous	Acidity (as CaCO3)	----	E283	2.0	mg/L	10.0	8.2	1.8	Diff <2x LOR	----
Physical Tests (QC Lot: 910160)											
WP2305502-001	AQM71	Acidity (as CaCO3)	----	E283	2.0	mg/L	3.8	4.3	0.4	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 906106)											
WP2305502-006	AQF40	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.077	0.077	0.0001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 906107)											
WP2305502-006	AQF40	Bromide	24959-67-9	E235.Br-T	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 906108)											
WP2305502-006	AQF40	Chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.26	0.26	0.004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 906109)											
WP2305502-006	AQF40	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	0.66	0.66	0.003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 906110)											
WP2305502-006	AQF40	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0992	0.0992	0.0161%	20%	----
Anions and Nutrients (QC Lot: 906111)											
WP2305502-006	AQF40	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 906423)											
WP2305502-001	AQM71	Ammonia, total (as N)	7664-41-7	E303	0.010	mg/L	0.252	0.246	2.55%	20%	----
Anions and Nutrients (QC Lot: 906506)											

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Anions and Nutrients (QC Lot: 906506) - continued											
WP2305555-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 906507)											
WP2305555-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.171	0.171	0.00875%	20%	----
Anions and Nutrients (QC Lot: 906509)											
WP2305555-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.025	0.024	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 906510)											
WP2305555-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	9.52	9.55	0.352%	20%	----
Anions and Nutrients (QC Lot: 907141)											
WP2305610-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.123	0.122	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 907143)											
WP2305610-001	Anonymous	Chloride	16887-00-6	E235.Cl-L	0.10	mg/L	59.0	59.1	0.200%	20%	----
Anions and Nutrients (QC Lot: 907144)											
WP2305610-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0407	0.0404	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 907145)											
WP2305610-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0016	0.0016	0.00008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 907146)											
WP2305610-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	28.6	28.6	0.0373%	20%	----
Anions and Nutrients (QC Lot: 908049)											
WP2305502-001	AQM71	Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	0.89	0.82	0.07	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 908595)											
WP2305502-001	AQM71	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0386	0.0381	1.33%	20%	----
Anions and Nutrients (QC Lot: 910185)											
WP2305607-001	Anonymous	Ammonia, total (as N)	7664-41-7	E303	2.00	mg/L	23.8	26.3	9.77%	20%	----
Anions and Nutrients (QC Lot: 913015)											
SK2301649-001	Anonymous	Ammonia, total (as N)	7664-41-7	E303	2.00	mg/L	35.0	34.9	0.521%	20%	----
Cyanides (QC Lot: 908806)											
WP2305489-003	Anonymous	Cyanide, free	----	E339-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Cyanides (QC Lot: 908807)											
WP2305489-003	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333-L	0.0010	mg/L	0.0021	0.0020	0.0001	Diff <2x LOR	----
Cyanides (QC Lot: 908808)											
WP2305489-003	Anonymous	Cyanide, weak acid dissociable	----	E336-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Cyanides (QC Lot: 909974)											

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Cyanides (QC Lot: 909974) - continued											
WP2305502-001	AQM71	Cyanide, strong acid dissociable (Total)	----	E333-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Cyanides (QC Lot: 909975)											
WP2305502-001	AQM71	Cyanide, weak acid dissociable	----	E336-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Cyanides (QC Lot: 909976)											
WP2305502-001	AQM71	Cyanide, free	----	E339-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 908059)											
WP2305502-001	AQM71	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	18.0	18.4	2.63%	20%	----
Organic / Inorganic Carbon (QC Lot: 909413)											
WP2305474-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	10.8	11.0	1.23%	20%	----
Total Metals (QC Lot: 908147)											
WP2305502-001	AQM71	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0736	0.0738	0.378%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00034	0.00032	0.00003	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0116	0.0120	3.18%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000079	0.0000076	0.0000004	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	14.5	15.9	9.00%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00016	0.00017	0.00001	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00064	0.00065	0.00001	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.976	0.998	2.24%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000053	0.000057	0.000003	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0010	0.0010	0.00002	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	2.25	2.24	0.278%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0951	0.0934	1.86%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000122	0.000130	0.000009	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00052	0.00051	0.00002	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	0.053	0.003	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	2.42	2.39	1.20%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00217	0.00215	0.806%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 908147) - continued											
WP2305502-001	AQM71	Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000220	0.000205	0.000015	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	6.34	6.38	0.703%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	2.16	2.15	0.605%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.0252	0.0252	0.348%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	1.64	1.73	0.08	Diff <2x LOR	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	0.00223	0.00195	0.00028	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000020	0.000021	0.000001	Diff <2x LOR	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 908152)											
WP2305502-001	AQM71	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0266	0.0266	0.0760%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00022	0.00021	0.00001	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0108	0.0106	0.987%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	0.0000051	0.00000006	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	14.8	15.2	2.54%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00014	0.00014	0.0000002	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00049	0.00048	0.000009	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.300	0.302	0.648%	20%	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0011	0.0011	0.00002	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.17	2.18	0.253%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 908152) - continued											
WP2305502-001	AQM71	Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0838	0.0826	1.34%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000116	0.000102	0.000014	Diff <2x LOR	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.42	2.38	1.64%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00214	0.00217	1.16%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.48	5.47	0.304%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	1.94	1.89	2.85%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0256	0.0253	1.46%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.88	1.74	0.14	Diff <2x LOR	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00073	0.00072	0.000004	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000015	0.000018	0.000002	Diff <2x LOR	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0017	0.0017	0.000004	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 908101)											
WP2305502-006	AQF40	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 909847)											
WP2305502-001	AQM71	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	0.00121	0.00100	0.00021	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 906386)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 906387)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 906406)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 908084)						
Solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 908085)						
Solids, total dissolved [TDS]	----	E162-L	3	mg/L	<3.0	----
Physical Tests (QCLot: 908756)						
Acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 910160)						
Acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Anions and Nutrients (QCLot: 906106)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 906107)						
Bromide	24959-67-9	E235.Br-T	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 906108)						
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 906109)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 906110)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 906111)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 906423)						
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 906505)						
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 906506)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 906507)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 906507) - continued						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 906509)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 906510)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 906513)						
Bromide	24959-67-9	E235.Br-T	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 907141)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 907142)						
Bromide	24959-67-9	E235.Br-T	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 907143)						
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 907144)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 907145)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 907146)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 908049)						
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	<0.20	----
Anions and Nutrients (QCLot: 908595)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 910185)						
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 913015)						
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	<0.010	----
Cyanides (QCLot: 908806)						
Cyanide, free	----	E339-L	0.001	mg/L	<0.0010	----
Cyanides (QCLot: 908807)						
Cyanide, strong acid dissociable (Total)	----	E333-L	0.001	mg/L	<0.0010	----
Cyanides (QCLot: 908808)						
Cyanide, weak acid dissociable	----	E336-L	0.001	mg/L	<0.0010	----
Cyanides (QCLot: 909974)						
Cyanide, strong acid dissociable (Total)	----	E333-L	0.001	mg/L	<0.0010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Cyanides (QCLot: 909975)						
Cyanide, weak acid dissociable	----	E336-L	0.001	mg/L	<0.0010	----
Cyanides (QCLot: 909976)						
Cyanide, free	----	E339-L	0.001	mg/L	<0.0010	----
Organic / Inorganic Carbon (QCLot: 908059)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 909413)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 908147)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	# 0.00012	B
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 908147) - continued						
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 908152)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 908152) - continued						
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Speciated Metals (QCLot: 908101)						
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----
Speciated Metals (QCLot: 909847)						
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----

Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 906385)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 906386)									
Conductivity	----	E100	1	µS/cm	1412 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 906387)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	100 mg/L	98.7	85.0	115	----
Physical Tests (QCLot: 906406)									
Turbidity	----	E121	0.1	NTU	200 NTU	96.5	85.0	115	----
Physical Tests (QCLot: 908084)									
Solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	96.4	85.0	115	----
Physical Tests (QCLot: 908085)									
Solids, total dissolved [TDS]	----	E162-L	3	mg/L	1000 mg/L	97.3	85.0	115	----
Physical Tests (QCLot: 908756)									
Acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	102	85.0	115	----
Physical Tests (QCLot: 910160)									
Acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 906106)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 906107)									
Bromide	24959-67-9	E235.Br-T	0.01	mg/L	0.5 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 906108)									
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 906109)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 906110)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 906111)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.6	90.0	110	----
Anions and Nutrients (QCLot: 906423)									
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	0.25 mg/L	97.9	85.0	115	----
Anions and Nutrients (QCLot: 906505)									
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.9	90.0	110	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 906506)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.4	90.0	110	----
Anions and Nutrients (QCLot: 906507)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 906509)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 906510)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 906513)									
Bromide	24959-67-9	E235.Br-T	0.01	mg/L	0.5 mg/L	99.2	85.0	115	----
Anions and Nutrients (QCLot: 907141)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 907142)									
Bromide	24959-67-9	E235.Br-T	0.01	mg/L	0.5 mg/L	99.9	85.0	115	----
Anions and Nutrients (QCLot: 907143)									
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.4	90.0	110	----
Anions and Nutrients (QCLot: 907144)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 907145)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.3	90.0	110	----
Anions and Nutrients (QCLot: 907146)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 908049)									
Kjeldahl nitrogen, total [TKN]	----	E319	0.15	mg/L	4 mg/L	98.5	75.0	125	----
Anions and Nutrients (QCLot: 908595)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.5 mg/L	95.8	80.0	120	----
Anions and Nutrients (QCLot: 910185)									
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	0.25 mg/L	99.8	85.0	115	----
Anions and Nutrients (QCLot: 913015)									
Ammonia, total (as N)	7664-41-7	E303	0.01	mg/L	0.25 mg/L	106	85.0	115	----
Cyanides (QCLot: 908806)									
Cyanide, free	----	E339-L	0.001	mg/L	0.125 mg/L	96.3	80.0	120	----
Cyanides (QCLot: 908807)									
Cyanide, strong acid dissociable (Total)	----	E333-L	0.001	mg/L	0.25 mg/L	90.6	80.0	120	----
Cyanides (QCLot: 908808)									

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Cyanides (QCLot: 908808) - continued									
Cyanide, weak acid dissociable	----	E336-L	0.001	mg/L	0.125 mg/L	98.5	80.0	120	----
Cyanides (QCLot: 909974)									
Cyanide, strong acid dissociable (Total)	----	E333-L	0.001	mg/L	0.25 mg/L	93.1	80.0	120	----
Cyanides (QCLot: 909975)									
Cyanide, weak acid dissociable	----	E336-L	0.001	mg/L	0.125 mg/L	104	80.0	120	----
Cyanides (QCLot: 909976)									
Cyanide, free	----	E339-L	0.001	mg/L	0.125 mg/L	102	80.0	120	----
Organic / Inorganic Carbon (QCLot: 908059)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Organic / Inorganic Carbon (QCLot: 909413)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	98.8	80.0	120	----
Total Metals (QCLot: 908147)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	105	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	97.5	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	94.8	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	100	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	90.6	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.7	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.8	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	112	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 908147) - continued									
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	95.7	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	93.9	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	104	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	97.3	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	97.5	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	99.8	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	97.3	80.0	120	----
Dissolved Metals (QCLot: 908152)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.3	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.0	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	95.9	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	107	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	110	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.1	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.0	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	96.4	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	96.1	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.1	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	86.6	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	108	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 908152) - continued									
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.1	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.6	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	113	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	99.8	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	89.2	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	92.6	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.2	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	98.3	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	95.6	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.5	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.4	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	99.1	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.8	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.5	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	98.1	80.0	120	----
Speciated Metals (QCLot: 908101)									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.025 mg/L	97.2	80.0	120	----
Speciated Metals (QCLot: 909847)									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.025 mg/L	98.0	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 906106)										
WP2305502-006	AQF40	Fluoride	16984-48-8	E235.F	1.07 mg/L	1 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 906107)										
WP2305502-006	AQF40	Bromide	24959-67-9	E235.Br-T	0.511 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 906108)										
WP2305502-006	AQF40	Chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 906109)										
WP2305502-006	AQF40	Sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 906110)										
WP2305502-006	AQF40	Nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 906111)										
WP2305502-006	AQF40	Nitrite (as N)	14797-65-0	E235.NO2-L	0.508 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 906423)										
WP2305502-001	AQM71	Ammonia, total (as N)	7664-41-7	E303	ND mg/L	0.25 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 906506)										
WP2305555-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.509 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 906507)										
WP2305555-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.57 mg/L	2.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 906509)										
WP2305555-001	Anonymous	Fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 906510)										
WP2305555-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 907141)										
WP2305610-001	Anonymous	Fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 907143)										
WP2305610-001	Anonymous	Chloride	16887-00-6	E235.Cl-L	99.9 mg/L	100 mg/L	99.9	75.0	125	----
Anions and Nutrients (QCLot: 907144)										
WP2305610-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.50 mg/L	2.5 mg/L	100	75.0	125	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 907145)										
WP2305610-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.491 mg/L	0.5 mg/L	98.2	75.0	125	----
Anions and Nutrients (QCLot: 907146)										
WP2305610-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	99.9 mg/L	100 mg/L	99.9	75.0	125	----
Anions and Nutrients (QCLot: 908049)										
WP2305502-001	AQM71	Kjeldahl nitrogen, total [TKN]	----	E319	4.83 mg/L	5 mg/L	96.5	70.0	130	----
Anions and Nutrients (QCLot: 908595)										
WP2305502-002	AQM72	Phosphorus, total	7723-14-0	E372-U	0.246 mg/L	0.25 mg/L	98.5	70.0	130	----
Anions and Nutrients (QCLot: 910185)										
WP2305607-001	Anonymous	Ammonia, total (as N)	7664-41-7	E303	ND mg/L	0.25 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 913015)										
SK2301649-001	Anonymous	Ammonia, total (as N)	7664-41-7	E303	ND mg/L	0.25 mg/L	ND	75.0	125	----
Cyanides (QCLot: 908806)										
WP2305489-003	Anonymous	Cyanide, free	----	E339-L	0.129 mg/L	0.125 mg/L	103	75.0	125	----
Cyanides (QCLot: 908807)										
WP2305489-003	Anonymous	Cyanide, strong acid dissociable (Total)	----	E333-L	0.221 mg/L	0.25 mg/L	88.4	75.0	125	----
Cyanides (QCLot: 908808)										
WP2305489-003	Anonymous	Cyanide, weak acid dissociable	----	E336-L	0.127 mg/L	0.125 mg/L	102	75.0	125	----
Cyanides (QCLot: 909974)										
WP2305502-001	AQM71	Cyanide, strong acid dissociable (Total)	----	E333-L	0.226 mg/L	0.25 mg/L	90.2	75.0	125	----
Cyanides (QCLot: 909975)										
WP2305502-001	AQM71	Cyanide, weak acid dissociable	----	E336-L	0.136 mg/L	0.125 mg/L	109	75.0	125	----
Cyanides (QCLot: 909976)										
WP2305502-001	AQM71	Cyanide, free	----	E339-L	0.139 mg/L	0.125 mg/L	111	75.0	125	----
Organic / Inorganic Carbon (QCLot: 908059)										
WP2305502-002	AQM72	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 909413)										
WP2305474-002	Anonymous	Carbon, total organic [TOC]	----	E355-L	ND mg/L	5 mg/L	ND	70.0	130	----
Total Metals (QCLot: 908147)										
WP2305502-001	AQM71	Aluminum, total	7429-90-5	E420	0.213 mg/L	0.2 mg/L	107	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0214 mg/L	0.02 mg/L	107	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 908147) - continued										
WP2305502-001	AQM71	Barium, total	7440-39-3	E420	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		Boron, total	7440-42-8	E420	0.110 mg/L	0.1 mg/L	110	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00427 mg/L	0.004 mg/L	107	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		Copper, total	7440-50-8	E420	0.0215 mg/L	0.02 mg/L	107	70.0	130	----
		Iron, total	7439-89-6	E420	2.03 mg/L	2 mg/L	101	70.0	130	----
		Lead, total	7439-92-1	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0957 mg/L	0.1 mg/L	95.7	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		Phosphorus, total	7723-14-0	E420	11.1 mg/L	10 mg/L	111	70.0	130	----
		Potassium, total	7440-09-7	E420	4.16 mg/L	4 mg/L	104	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		Silicon, total	7440-21-3	E420	9.39 mg/L	10 mg/L	93.9	70.0	130	----
		Silver, total	7440-22-4	E420	0.00396 mg/L	0.004 mg/L	98.9	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	20.4 mg/L	20 mg/L	102	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0385 mg/L	0.04 mg/L	96.4	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00415 mg/L	0.004 mg/L	104	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0213 mg/L	0.02 mg/L	107	70.0	130	----
		Tin, total	7440-31-5	E420	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0410 mg/L	0.04 mg/L	103	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00432 mg/L	0.004 mg/L	108	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		Zinc, total	7440-66-6	E420	0.423 mg/L	0.4 mg/L	106	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 908147) - continued										
WP2305502-001	AQM71	Zirconium, total	7440-67-7	E420	0.0385 mg/L	0.04 mg/L	96.2	70.0	130	----
Dissolved Metals (QCLot: 908152)										
WP2305502-001	AQM71	Aluminum, dissolved	7429-90-5	E421	0.228 mg/L	0.2 mg/L	114	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0217 mg/L	0.02 mg/L	109	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0458 mg/L	0.04 mg/L	114	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.0106 mg/L	0.01 mg/L	106	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.110 mg/L	0.1 mg/L	110	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		Iron, dissolved	7439-89-6	E421	2.00 mg/L	2 mg/L	99.9	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0217 mg/L	0.02 mg/L	109	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.114 mg/L	0.1 mg/L	114	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	11.5 mg/L	10 mg/L	115	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	4.58 mg/L	4 mg/L	114	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	10.4 mg/L	10 mg/L	104	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	2.01 mg/L	2 mg/L	100	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	22.0 mg/L	20 mg/L	110	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00417 mg/L	0.004 mg/L	104	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0225 mg/L	0.02 mg/L	112	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 908152) - continued										
WP2305502-001	AQM71	Titanium, dissolved	7440-32-6	E421	0.0414 mg/L	0.04 mg/L	103	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00427 mg/L	0.004 mg/L	107	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.421 mg/L	0.4 mg/L	105	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
Speciated Metals (QCLot: 908101)										
WP2305502-006	AQF40	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
Speciated Metals (QCLot: 909847)										
WP2305502-001	AQM71	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 22 -

Page 1 of 2

Environmental Division Winnipeg
Work Order Reference
WP2305502

Telephone : +1 204 255 9720

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients

Select Report Format: ☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: Karen.Mathers@Stantec.com
Email 2: Brad.Horne@stantec.com
Email 3: Jeremy.Jackson@stantec.com

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax:
Email 2:

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statut

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information

ALS Account # / Quote #:	ARGI100/WP2022ARGI1000003_V3
Job #:	ALAMOS
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: JD

Sampler: BE, AR

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	E283 (ACIDITY), E290A (ALK)	E235.BR-T, E325.CL-L, E235.F	E235.NO2-L, E235.NO3-L, E235.SO4	E358-L, E355-L (DOC, TOC)	E333-T, E336-T, E336-T (CN'S)	E532 (CR6)	E100-L (EC), E108 (PH)	E421 (MET-D), E420 (MET-T)	E319 (TKN), EC100 (HARDNESS)	E303 (NH3)	E372-U (P-T)	E160-L (TSS-LR)	E162-L (TDS)	E121 (TURB)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	AQM71	18-04-23	1352	W	8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	AQM72		1338																			
	AQM73		1335																			
	AQM28		1351																			
	AQM29C		1305																			
	AQF40		1006																			
	AQF41		1026																			
	AQF42		0854																			
	AQF43		0908																			
	AQF44		0934																			
	AQF45		0949																			
	AQF46		1128																			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☐ NO

Are samples for human consumption/ use?
☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

all dissolved bottles field filtered

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
2.6							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date: 19-04-23	Time:	Received by:	Date: APR 20 2023	Time: 1103	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 2 of 2

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Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting
Contact:	Karen Mathers
Phone:	204-928-7621
	Company address below will appear on the final report
Street:	500 - 311 Portage Ave
City/Province:	Winnipeg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	Alamos Gold
Contact:	

Reports / Recipients	
Select Report Format:	☐ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Karen.Mathers@Stantec.com
Email 2	Brad.Horne@stantec.com
Email 3	Jeremy.Jackson@stantec.com
Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	

Turnaround Time (TAT) Requested
☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.
Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.
Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm (24hr)
For all tests with rush TATs requested, please contact your AM to confirm availability.

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	ARGI100/WP2022ARGI1000003_V3	AFE/Cost Center:	PO#
Job #:	ALAMOS	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (ALS use only): **ALS Contact:** DD **Sampler:** BB, AR

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	E283 (ACIDITY), E290A (ALK)	E235.BR-T, E325.CL-L, E235.F	E235.NO2-L,E235.NO3-L,E235.SO4	E358-L, E355-L (DOC, TOC)	E333-T, E336-T, E339-T (CN'S)	E532 (CR6)	E100.L (EC), E108 (PH)	E421 (MET-D), E420 (MET-T)	E319 (TKN), EC100 (HARDNESS)	E303 (NH3)	E372-U (P-T)	E160-L (TSS-LR)	E162-L (TDS)	E121 (TURB)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	AQF7S	18-04-23	1143	W	8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	~~AQF35~~	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
	AQF36	18-04-23	1047	W	8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	QC-01	18-04-23	—																			
	TRIP BLANK	—	—																			
	FIELD BLANK	18-04-23	1450																			

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C			
2.6						

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
B Lloyd	April 19, 2023	0930		APR 20 2023	11:03			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Appendix B Hold Times

Hold Times: General Information & Interpretation of Exceedances

Version: Nov 14, 2017

A sample hold time is the recommended maximum time between sampling and analysis, and is defined for specific tests matched with sample matrix and sample preservation practices where applicable. Maximum hold times are established and intended as best-practice guidance to protect the integrity of test samples, and to minimize the potential for significant changes to samples prior to analysis, due to mechanisms like bacterial action, chemical reaction, and evaporative loss. Despite common perception, hold times are not intended to be used as fixed limits for validation or invalidation of test results; rather, they are intended to define the best-practice for holding time that will ensure valid results.

Where available and established, ALS Canada uses hold time guidelines established either by specific provincial regulators (e.g. British Columbia MOE, Ontario MOE), or by the CCME (Canadian Council of Ministers of the Environment). In the absence of CCME or provincial hold time guidelines, ALS uses published guidelines from other reputable public or government organizations such as the US EPA, the American Public Health Association (APHA), or Environment Canada.

Rigorous scientific studies are not always available to substantiate reliable hold time recommendations for all test methods. Because of this, published hold time guidelines may sometimes be somewhat arbitrary, and in many cases are very conservative. This problem has been recognized by the US EPA, and was the impetus for a 2006 EPA study titled “Sample Holding Time Re-Evaluation”. The EPA introduction to this project stated the following:

“While holding times may appear adequate to protect sample integrity and provide sufficient time for laboratory analysis, relevant data is sparse on individually defined holding times and, thus, some of the holding times appear to be arbitrary and/or politically driven. Holding times appear to be arbitrary when a single value is applied over a large general class of compounds (e.g., pesticides or polyaromatic hydrocarbons); when the holding time was originally "established" for aqueous media and then blindly applied to other media (e.g., sediments and tissues); or when a contaminant is known to be chemically highly stable and will still be present in the sample even if the sample is not extracted in the regulatory time frame. For example, if PCBs significantly degraded after 7 days, then there would not be an environmental problem with PCBs today.”

Another important reason for conservatism in hold time guidelines is that a single guideline may be applied to a vast range of different sample types and compositions. A hold time guideline that is appropriate for a wastewater with complex chemical and microbiological composition may be overly conservative for less complex samples. Thus, it is important to note that for many test parameters and for many sample types, no noticeable degradation or change to results will be observed long after the recommended hold time has passed.

With consideration of conservatism of some specific hold time guidelines, the potential for data quality impact due to hold times can sometimes be evaluated as a function of the degree of exceedance of the recommended hold time. If analysis within a recommended hold time is understood to prevent data quality issues, then it should be clear that a very minimal exceedance of the recommended hold time (e.g. as a percentage of the original hold time) cannot cause test results to immediately become compromised.

When analytical hold times are exceeded, it is common practice to apply professional judgement to assess whether the results may still be useable and fit-for-purpose. For most tests (with the exception of microbiological tests used for health purposes), where samples have been stored appropriately (e.g. under refrigeration), ALS normally recommends that test results with hold time exceedances of less than 50% of the recommended hold time may be considered valid and defensible, with the caveat that the measurement uncertainty associated with those test results may be higher than usual. A common approach under the US EPA Contract Laboratory Program is to flag test results with marginal hold time exceedances as “estimates” to indicate that a higher than usual degree of uncertainty. For more significant hold time exceedances, the environmental fate and stability characteristics of the specific substance(s) being tested should be considered prior to determining whether test results may or may not still be fit-for-purpose. As part of the evaluation of any test results that may have been analyzed beyond the recommended hold time, ALS also recommends to consider consistency with historical or expected test results, or with other available test results from related or similar samples (e.g. from other samples at the same site).

Many regulators will accept test results analyzed beyond best-practice hold times if professional judgment indicates that the results should still be defensible and fit-for-purpose, with consideration of the specific factors described above.

ATTACHMENT NOC-02-02-B

Hold Times: General Information & Interpretation of Exceedances

Version: Nov 14, 2017

A sample hold time is the recommended maximum time between sampling and analysis, and is defined for specific tests matched with sample matrix and sample preservation practices where applicable. Maximum hold times are established and intended as best-practice guidance to protect the integrity of test samples, and to minimize the potential for significant changes to samples prior to analysis, due to mechanisms like bacterial action, chemical reaction, and evaporative loss. Despite common perception, hold times are not intended to be used as fixed limits for validation or invalidation of test results; rather, they are intended to define the best-practice for holding time that will ensure valid results.

Where available and established, ALS Canada uses hold time guidelines established either by specific provincial regulators (e.g. British Columbia MOE, Ontario MOE), or by the CCME (Canadian Council of Ministers of the Environment). In the absence of CCME or provincial hold time guidelines, ALS uses published guidelines from other reputable public or government organizations such as the US EPA, the American Public Health Association (APHA), or Environment Canada.

Rigorous scientific studies are not always available to substantiate reliable hold time recommendations for all test methods. Because of this, published hold time guidelines may sometimes be somewhat arbitrary, and in many cases are very conservative. This problem has been recognized by the US EPA, and was the impetus for a 2006 EPA study titled “Sample Holding Time Re-Evaluation”. The EPA introduction to this project stated the following:

“While holding times may appear adequate to protect sample integrity and provide sufficient time for laboratory analysis, relevant data is sparse on individually defined holding times and, thus, some of the holding times appear to be arbitrary and/or politically driven. Holding times appear to be arbitrary when a single value is applied over a large general class of compounds (e.g., pesticides or polyaromatic hydrocarbons); when the holding time was originally "established" for aqueous media and then blindly applied to other media (e.g., sediments and tissues); or when a contaminant is known to be chemically highly stable and will still be present in the sample even if the sample is not extracted in the regulatory time frame. For example, if PCBs significantly degraded after 7 days, then there would not be an environmental problem with PCBs today.”

Another important reason for conservatism in hold time guidelines is that a single guideline may be applied to a vast range of different sample types and compositions. A hold time guideline that is appropriate for a wastewater with complex chemical and microbiological composition may be overly conservative for less complex samples. Thus, it is important to note that for many test parameters and for many sample types, no noticeable degradation or change to results will be observed long after the recommended hold time has passed.

With consideration of conservatism of some specific hold time guidelines, the potential for data quality impact due to hold times can sometimes be evaluated as a function of the degree of exceedance of the recommended hold time. If analysis within a recommended hold time is understood to prevent data quality issues, then it should be clear that a very minimal exceedance of the recommended hold time (e.g. as a percentage of the original hold time) cannot cause test results to immediately become compromised.

When analytical hold times are exceeded, it is common practice to apply professional judgement to assess whether the results may still be useable and fit-for-purpose. For most tests (with the exception of microbiological tests used for health purposes), where samples have been stored appropriately (e.g. under refrigeration), ALS normally recommends that test results with hold time exceedances of less than 50% of the recommended hold time may be considered valid and defensible, with the caveat that the measurement uncertainty associated with those test results may be higher than usual. A common approach under the US EPA Contract Laboratory Program is to flag test results with marginal hold time exceedances as “estimates” to indicate that a higher than usual degree of uncertainty. For more significant hold time exceedances, the environmental fate and stability characteristics of the specific substance(s) being tested should be considered prior to determining whether test results may or may not still be fit-for-purpose. As part of the evaluation of any test results that may have been analyzed beyond the recommended hold time, ALS also recommends to consider consistency with historical or expected test results, or with other available test results from related or similar samples (e.g. from other samples at the same site).

Many regulators will accept test results analyzed beyond best-practice hold times if professional judgment indicates that the results should still be defensible and fit-for-purpose, with consideration of the specific factors described above.

ATTACHMENT NOC-02-02-C

Stantec

Memo

To:	Alamos Gold Inc. Winnipeg, MB	From:	Stantec Consulting Ltd. Winnipeg, MB
File:	111473076	Date:	May 17, 2024

Reference: Quality Assurance and Quality Control (QA/QC) Evaluation of Surface Water Samples Collected from February and March, 2024

PREAMBLE

Alamos Gold Inc. (Alamos) received a letter from Marcel Colomb First Nation on February 9, 2024, that noted concerns regarding previous discrepancies between dissolved and total metals concentrations, specifically copper and lead concentrations in the East Pit (sampled in 2018, 2021, and 2022), Wendy Pit (sampled in 2018), and Hughes River (sampled in 2018, 2022, and 2023). Alamos has requested that Stantec Consulting Ltd. (Stantec) provide a memorandum outlining preliminary Quality Assurance and Quality Control (QA/QC) results pertaining to dissolved and total metals concentrations from the 2024 monitoring program completed in support of the Lynn Lake Gold Project (the Project).

The phenomenon of measured dissolved metals concentrations being greater than corresponding total metal concentrations is very common within the practice of water quality monitoring in general. Sample measurements have a degree of analytical uncertainty which can result in reported dissolved concentrations being greater than total concentrations, particularly when the true dissolved fraction is close to - or the same as - the total fraction (i.e., when a metal present in a sample is entirely or almost entirely dissolved). This analytical uncertainty is largely due to the finite precision and accuracy of laboratory instrumentation that are beyond the control of laboratory and field personnel. An additional potential source of uncertainty is during sample collection. However, there are a number of standard sample collection and laboratory QA/QC protocols that, when adhered to, generally provide a high degree of confidence that the sample results have an acceptable degree of accuracy and precision, and that measured concentrations are generally representative of the true water chemistry under investigation.

Stantec practices rigorous and industry-standard QA/QC protocols for the collection, storage, and shipping of samples to the analytical laboratory. Because of the previously identified concerns regarding dissolved and total metals concentrations, Stantec has stressed the importance of adhering to standard best practices and QA/QC protocols to field staff involved with the 2024 monitoring program.

The 2024 monitoring program is designed to address pre-construction surface water quality monitoring requirements of the federal Decision Statement issued by the Impact Assessment Agency of Canada for the Project, and to address baseline data requirements relevant to the Surface Water Monitoring and Management Program (SWMMP) and the Aquatic Effects Monitoring Program (AEMP; Maps 1 and 2). Although in situ parameters are currently being measured monthly on the Hughes River (AQF40A, AQF41), the collection of grab samples in the Hughes River were not included in the 2024 program due to the requirements outlined in the Decision Statement as well as pre-existing baseline data having already been collected for Hughes River in 2018, 2022, and 2023. Vertical profiles in the East Pit and Wendy Pit will be completed as part of the monitoring program in July 2024, but are not included in the monthly sampling program. Based on the design of the 2024 monitoring program, no direct comparison can be made between results of the 2024 program (to date) and previous grab sample results reported from the Hughes River (2018, 2022, and 2023), East Pit (2018, 2021, and 2022), and Wendy Pit (2018).

Reference: Quality Assurance and Quality Control (QA/QC) Evaluation of Surface Water Samples Collected from February and March, 2024

This memorandum includes a summary of the standard QA/QC measures used by Stantec (including laboratory-recommended best practices for sample collection) to address concerns related to occurrences of dissolved concentrations being greater than total concentrations. In addition, the results of the QA/QC review for the 2024 monitoring program (to date) are presented, including summaries of field and trip blank results, the relative percent differences (RPDs) between duplicate samples, and occurrences of dissolved concentrations being greater than total concentrations. The raw data for the sample QA/QC review are provided in Attachment A.

STANTEC SAMPLING METHODS AND QA/QC PROCEDURES

Stantec's sampling methods and QA/QC procedures are implemented for overall sample integrity. However, the methods and procedures also limit the potential for occurrences of dissolved metal concentrations that are above the corresponding total metal concentrations.

WATER SAMPLING

Water samples for the Project are collected according to the procedures for surface grab samples described in Stantec's Standard Operating Procedures (SOPs) and in the Protocols Manual for Water Quality Sampling in Canada (CCME 2011). Samples are collected by immersing the collection bottle upside down and with water flowing away from the opening, until the bottle is full. In cases where the sample is collected by wading into a stream, in situ sampling probes and grab sample containers are immersed in the water upstream of the sampler's position in the stream. The preservatives are added immediately after the bottle is full. Samples for dissolved organic carbon and dissolved metals, including dissolved mercury, are filtered in the field within 15 minutes of sample collection.

Steps taken to maintain sample integrity include wearing powder-free nitrile gloves while collecting samples, filtering the samples through 45 micrometre (µm) filter disks, and using preservatives where appropriate, in accordance with the analytical laboratory instructions.

Water samples are shipped from Lynn Lake, Manitoba (MB) to ALS Environmental (ALS) in Winnipeg, MB by Canada Post, Express mail, taking every step possible to meet sample holding times. ALS Environmental is a Canadian Association for Laboratory Accreditation certified laboratory for the analyses conducted.

SAMPLE COLLECTION QA/QC PROCEDURES

The QA/QC measures for water quality sampling include the collection and/or handling of field blanks, travel blanks, and duplicates. The methods involved with these measures are discussed below.

Field Blanks

Field blank samples are used to detect potential sample cross-contamination during collection, handling, shipping, and analyses. Sample analytical results are examined to identify detectable levels of the measured parameters.

Field blank samples collected for the Project are prepared in the field. A set of sample bottles are filled with deionized water provided from the laboratory (ALS). The field blank samples are then exposed to the sampling environment at a site for as long as it took to fill the normal sample bottle with a water sample. Field

blank samples are filtered and preserved, as required, following the same method as the water samples. In March 2024, Stantec implemented the collection of a 'filtration control' field blank during monthly Project sampling. The filtration control field blank is not filtered in the same manner as the primary field blank samples (i.e. no filtration for the dissolved analytes) so that potential contamination related to the field-filtration process (which may contribute to spurious results for dissolved metals) can be checked.

Travel Blanks

Field blanks assess the potential for cross-contamination in the field or during transit. Travel blanks consist of laboratory-provided bottles that are pre-filled with deionized water and sealed. Travel blanks accompany water samples to and from the field and were opened only when they arrived at the laboratory for analysis.

Field Duplicates

Field duplicates are used to measure within-site variability and the precision of field methods and laboratory analyses.

Field duplicates are collected at randomly selected sampling sites along with the parent sample at a frequency of one duplicate sample per 10 water samples collected from the Project area. Duplicate samples are prepared (i.e., filtered and preserved as required) and then submitted to the analytical laboratory along with the parent sample. Duplicates are submitted blind, without the location, name, or time indicated on the label, to measure within-site variability and the precision of field methods and laboratory analyses. Duplicate results are compared to the parent sample using RPDs. The RPDs are calculated as the absolute difference between the two measurements divided by the average of the measurements, as follows:

$$RPD = \frac{|result\ 1\ -\ result\ 2|}{(result\ 1 + result\ 2) \div 2}\ x\ 100$$

If the duplicate concentrations for a given parameter were both greater than five times the parameter's detection limit (DL) and the RPD remained below 20%, then the duplicate sample RPD result for the parameter is not expected to adversely affect data quality.

The RPD 'threshold' of 20% is commonly used as a data quality objective in Canadian jurisdictions (Ontario MOE 2011; BC ENV 2013; CCME 2016). An RPD of more than 20% indicates a possible problem and an RPD of more than 50% indicates a definite problem, most likely from sample contamination or a lack of sample representativeness (BC MOE 2013). However, it is not unusual to find higher variability for the field duplicates for select parameters, especially if the water is turbid (i.e., total suspended sediments greater than 25 milligram per litre [mg/L]).

LABORATORY-RECOMMENDED BEST PRACTICES

To help address the observed discrepancies between total and dissolved concentrations, Stantec inquired with the analytical laboratory (ALS) about potential field-related causes for the discrepancies. ALS noted that occurrences of dissolved concentrations being greater than total concentrations is a very common issue within the broader practice of water quality monitoring and is caused by analytical variability in the laboratory and/or sample collection techniques in the field. ALS provided the following recommendations, or "best practices", related to field techniques to help prevent or reduce the occurrence of this phenomenon (B. Mack, personal communication, February 8, 2024 and May 14, 2024):

- "*Ensure the dissolved and total samples are taken from the same "grab" of the source sample.*
- *Ensure new syringes and filters are used for each sample.*
- *Ensure filters, syringes, and sample bottles aren't exposed to any airborne particulates or anything else that may impact metals concentrations in the water.*
- *Ensure samples are taken, filtered, and submitted to the lab for preservation within 14 days*."

Stantec adheres to the above recommended best practices when collecting water samples for the Project, as they align with the standard methods for surface grab sample collection described in Stantec's SOPs and in the Protocols Manual for Water Quality Sampling in Canada (CCME 2011).

DATA REVIEW QA/QC PROCEDURES

Following sample collection and submission to ALS, Stantec adheres to the following QA/QC procedures with respect to analytical data quality:

- Stantec is provided a Sample Receipt Notification (SRN) from ALS once the samples have been received by the lab. The SRN includes a copy of the Chain of Custody form submitted with the samples and general project information. Stantec reviews this communication to confirm that that correct sample identification numbers are listed and that the appropriate analyses will be completed on the samples submitted.
- Upon receipt of analytical results from ALS, provided in the Certificate of Analysis (COA), the following QA/QC procedures are completed:
    - Hold times exceedances (if any) are reviewed and evaluated for potential cause. It is a common occurrence with remote projects that hold times are exceeded for pH, turbidity, and nitrate/nitrite due to their relatively short, recommended hold times (between 15 minutes and 3 days). The recommended hold times for dissolved and total metals are between 28 and 180 days depending on the analytical method and are therefore typically not exceeded even when sampling from remote locations (no hold time exceedances were identified for metal analytes in the 2024 program). It is important to note that recommended hold times are generally conservative and are not intended to represent fixed limits for sample validation (ALS 2017). However, hold times are considered best-practice to limit the potential for sample degradation due to mechanisms such as bacterial action, chemical reaction, and evaporative loss (ALS 2017). Hold times are not discussed further in this memo.
    - Field and travel blanks are compared to the DL of each parameter. If parameter concentrations are greater than the DL and greater than five times the DL, the result is flagged for the laboratory to recheck and either confirm or repeat the analysis.
    - Field duplicate results are compared to the parent sample using RPDs (described above). If the RPD is above 20% and the duplicate concentrations for a given parameter were both greater than five times the parameter's DL, the result is flagged for the laboratory to recheck and either confirm or repeat the analysis.

- The procedure to check dissolved versus total metals involves calculating the ratio of dissolved over total metal concentration for each metal pair in each sample collected (including field and travel blanks). The results are screened and flagged for a recheck of the analysis from ALS if the following criteria are present: the dissolved metal concentration are greater than 1.25 times the total metal concentration, and both dissolved and total metal concentrations are greater than five (5) times the lowest detection limit.

PRELIMINARY RESULTS FROM 2024 MONITORING PROGRAM

Stantec has completed internal QA/QC checks on analytical results from the February and March sampling events in 2024. The results of these QA/QC checks are discussed below.

Field and Travel Blanks

To date, analytical results for three field blanks and two travel blanks have been received from the laboratory. In February, one field blank was collected, and in March, one regular field blank ('FBA'; filtered and unfiltered) and one filtration control field blank ('FBB'; unfiltered) were collected.

Approximately 93% of field blank analyses were below the DLs. Concentrations of dissolved sodium (3 blanks), total sodium (2 blanks), and dissolved barium (1 blank) were observed to be above the screening criteria (i.e. greater than the DL and greater than five times DL; Table 1). All results had been previously rechecked by ALS and given qualifiers on the COA indicating that the results were confirmed by repeat analysis.

Approximately 98% of the travel blank analyses were below the DLs. No concentrations above the screening criteria were observed in the travel blank samples.

The results indicate that some sample cross-contamination during collection, handling, shipping, and/or analyses may have also occurred in the surface water samples. Therefore, consideration of the identified parameters (e.g., sodium and barium) above the DL in the field/travel blanks is warranted for the interpretation of the overall sample results. Field and travel blank results for the other analytes (including copper and lead) indicate a high degree of confidence that cross-contamination did not occur for these analytes in the water samples. The overall quality of the surface water samples is considered acceptable given that over 95% of the field/travel blank analyses were below the DL.

Table 1: 2024 Blank Samples with Metal Concentrations above Screening Criteria

Sample ID	Sample Date	Parameter	Result (mg/L)	Detection Limit (mg/L)	Greater than Detection Limit	Greater than 5x Detection Limit
Field Blank	28-Sep-2023	Sodium, dissolved	1.24	0.05	Yes	Yes
FBA	20-Mar-2024	Sodium, total	0.256	0.05	Yes	Yes
		Barium, dissolved	0.00079	0.0001	Yes	Yes
		Sodium, dissolved	0.501	0.05	Yes	Yes
FBB	20-Mar-2024	Sodium, total	0.26	0.05	Yes	Yes
		Sodium, dissolved	0.254	0.05	Yes	Yes

The analytical results for field and travel blanks are provided in Table A-1.

Filtration Control Field Blank (Dissolved Metals)

Discrepancies between the field blank ("FBA") and filtration blank ("FBB") were observed for dissolved barium, dissolved copper, dissolved potassium, and dissolved sodium (Table A-1). These dissolved metal concentrations were above the DL in the filtered field blank (FBA) but were below the DL in the unfiltered control blank (FBB), indicating that the field-filtration step may have contributed to some contamination in the FBA field blank (and possibly the filtered samples for dissolved metals).

Except for dissolved sodium, the above metals were not identified to have greater dissolved concentrations than total concentrations in the water samples collected from the Gordon and MacLellan sites. Although the overall quality of the surface water samples is considered acceptable, consideration of the identified parameters above the DL in the field blank (FBA) is warranted for the interpretation of the sample results. So far, only one filtration control field blank (unfiltered) has been used in the 2024 field program. In addition to regular field blanks, filtration control field blanks will continue to be used to monitor the potential influence of the filtration step on sample integrity for each field campaign in 2024.

Field Duplicates

To date, analytical results for two field duplicates, one from each field campaign (February and March), have been received from the laboratory. Only one parameter (sulphate) in the duplicate pair from February exceeded the screening criteria (RPD above 20% and both concentrations above 5 times DL). A recheck of the results was requested on April 19, 2024, and the result was confirmed by ALS on April 26, 2024. No metal concentrations exceeded the screening criteria in either of the duplicate pairs.

The results of the analysis of replicate samples generally indicates a high degree of confidence in the precision of the field methods and laboratory analyses. The RPDs from the comparison of the parent sample to the duplicate sample for each parameter are presented in Table A-2.

Dissolved and Total Metals

The QA/QC check for dissolved versus total metal concentrations identified two samples with dissolved sodium concentrations above the corresponding total concentrations: one sample from site AQM76-T25 collected in February and the filtered field blank collected in March (Table 2). Both samples were previously rechecked by ALS and given an analysis qualifier indicating that the result was confirmed by ALS. No other dissolved to total metal ratios were above the recheck criteria in results from February and March. To date in 2024, low magnitude discrepancies where the dissolved concentration was above the total concentration in field samples (but within the expected range of analytical error) occurred for barium (4 samples), calcium (4 samples), lithium (7 samples), magnesium (1 sample), manganese (1 sample), potassium (4 samples), rubidium (3 samples), selenium (1 sample), sodium (2 samples), strontium (8 samples), sulfur (3 sample), and zirconium (1 sample). These occurrences were either below a 1.15-fold dissolved to total ratio and/or were lower than five times the DL. The other analytes (including copper and lead) did not have a dissolved concentration above the corresponding total concentration.

The results indicate that occurrences of dissolved concentrations greater than total concentrations generally occurred with an acceptable magnitude and frequency consistent with normal analytical variability. While

some consideration of these discrepancies is warranted for the interpretation of results, there is a high degree of confidence that the analytical results are generally representative of the true quality of the samples.

Table 2: 2024 Lynn Lake Gold Project Water Quality - Sodium Concentrations

Sample ID	Sample Date	Dissolved Sodium (mg/L)	Total Sodium (mg/L)	Dissolved / Total Ratio	Detection Limit (mg/L)	Dissolved & Total Concentration > 5x Detection Limit
AQM76-T25	28-Feb-2024	3.41	1.34	2.54	0.05	Yes
FBA	20-Mar-2024	0.501	0.256	1.96	0.05	Yes

SUMMARY

Concerns about previously identified discrepancies between dissolved and total metals concentrations have been recently noted to Alamos by Marcel Colomb First Nation. As such, Stantec has completed a preliminary review of QA/QC results pertaining to dissolved and total metals concentrations from the 2024 monitoring program to date (February and March 2024 sampling).

Approximately 93% of field blank analyses and 98% of the travel blank analyses were below DLs. Three field blank samples were identified with metal concentrations above the screening criteria. All results were previously rechecked by the laboratory and confirmed by repeat analysis. In field duplicates, no metal concentrations exceeded the screening criteria for the duplicate pairs collected. Stantec identified two samples with dissolved sodium concentrations above the screening criteria for dissolved versus total metals concentrations. Both samples were previously rechecked by the laboratory and the results were confirmed by repeat analysis.

The limited discrepancies that were identified during the standard QA/QC review are generally consistent with the analytical variability of water quality monitoring programs in general. While some consideration of the noted discrepancies is warranted for the interpretation of results (e.g., for the characterization of water quality at a given site), there is generally a high degree of confidence in the field collection methods and the analytical results of the water quality samples reviewed herein.

Only one field and filtration blank comparison has been completed to date. Some metals were above the DL in the filtered field blank (FBA) but were below the DL in the unfiltered control blank (FBB), indicating that the field-filtration step may have contributed to some contamination for a limited number of parameters in the FBA field blank (and possibly the filtered samples for dissolved metals). However, this discrepancy generally did not correspond to dissolved concentrations above total concentrations in the monitoring samples. Stantec will continue to use field blanks and filtration control blanks to monitor potential cross-contamination during the sample collection process.

Stantec will continue to adhere to standard best practices and QA/QC protocols outlined in this memorandum and will continue to highlight the importance of these practices and protocols to both field and laboratory staff. Stantec will also continue to promptly review analytical data upon receipt from the laboratory to allow Stantec to flag any potential issues in the process from sample collection to analysis.

Reference: Quality Assurance and Quality Control (QA/QC) Evaluation of Surface Water Samples Collected from February and March, 2024

REFERENCES

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Ontario MOE (Ministry of Environment). 2011. Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Laboratory Services Branch, MOE.

Stantec Consulting Ltd.

Attachment: Map 1. Proposed 2024 Surface Water Quality Monitoring Locations – Gordon Site
Map 2. Proposed 2024 Surface Water Quality Monitoring Locations – Gordon Site

Attachment A

Table A-1: Analytical Results of Field Blanks and Travel Blanks for the February and March Surface Water Sampling Programs, Lynn Lake Gold Project

Parameter	Lowest Detection Limit	Units	Regular Field Blank (filtered and unfiltered)	Regular Field Blank (filtered and unfiltered)	Filtration Control Field Blank (unfiltered)	Trip Blanks	
			FIELD BLANK	FBA	FBB	TRIP BLANK	TRIP BLANK
			29-Feb-2024	20-Mar-2024	20-Mar-2024	29-Feb-2024	21-Mar-2024
			WP2405217-008	WP2406895-006	WP2406895-007	WP2405217-009	WP2406895-010
Physical Tests (Water)							
Conductivity	1	µS/cm	<1.0	1.4	1.3	<1.0	<1.0
Acidity (as CaCO3)	2	mg/L	2.2	<2.0	<2.0	<2.0	<2.0
Alkalinity, bicarbonate (as CaCO3)	2	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, carbonate (as CaCO3)	2	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, hydroxide (as CaCO3)	2	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, phenolphthalein (as CaCO3)	2	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, total (as CaCO3)	2	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Hardness (as CaCO3), dissolved	0.5	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Solids, total dissolved [TDS]	3	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0
Solids, total suspended [TSS]	1	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Turbidity	0.1	NTU	<0.10	0.16	<0.10	<0.10	<0.10
pH	0.1	pH units	5.21	5.63	5.67	5.24	5.30
Anions and Nutrients (Water)							
Ammonia, total (as N)	0.005	mg/L	<0.0050	<0.0050	<0.0050	0.007	0.0063
Bromide	0.1	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Chloride	0.5	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride	0.02	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020
Kjeldahl nitrogen, total [TKN]	0.05	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Nitrate (as N)	0.02	mg/L	<0.020	0.023	<0.020	<0.020	<0.020
Nitrate + Nitrite (as N)	0.02	mg/L	<0.0224	0.023	<0.0224	<0.0224	<0.0224
Nitrite (as N)	0.01	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus, total	0.002	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Sulfate (as SO4)	0.3	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Cyanate	0.2	mg/L	<1.00	<0.20	<0.20	<1.00	<0.20
Cyanides							
Cyanide, free	0.001	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, strong acid dissociable (Total)	0.001	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cyanide, weak acid dissociable	0.001	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Thiocyanate	0.5	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon (Water)							
Carbon, dissolved organic [DOC]	0.5	mg/L	<0.50	0.67	<0.50	<0.50	<0.50
Carbon, total organic [TOC]	0.5	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Total Metals (Water)							
Aluminum, total	0.003	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Antimony, total	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, total	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium, total	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Beryllium, total	0.00002	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, total	0.00005	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	0.01	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, total	0.000005	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium, total	0.05	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Cesium, total	0.00001	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, total	0.0005	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total	0.0005	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, total	0.01	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Lead, total	0.00005	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium, total	0.001	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium, total	0.005	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Manganese, total	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, total	0.000005	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, total	0.00005	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel, total	0.0005	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, total	0.05	mg/L	<0.050; <0.030	<0.050; <0.030	<0.050; <0.030	<0.050; <0.030	<0.050; <0.030
Potassium, total	0.05	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Rubidium, total	0.0002	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Selenium, total	0.00005	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000066
Silicon, total	0.1	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Silver, total	0.00001	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	0.05	mg/L	<0.050	0.256	0.26	<0.050	<0.050
Strontium, total	0.0002	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Sulfur, total	0.5	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50

Table A-1: Analytical Results of Field Blanks and Travel Blanks for the February and March Surface Water Sampling Programs, Lynn Lake Gold Project

Parameter	Lowest Detection Limit	Units	Regular Field Blank (filtered and unfiltered)	Regular Field Blank (filtered and unfiltered)	Filtration Control Field Blank (unfiltered)	Trip Blanks	
			FIELD BLANK	FBA	FBB	TRIP BLANK	TRIP BLANK
			29-Feb-2024	20-Mar-2024	20-Mar-2024	29-Feb-2024	21-Mar-2024
			WP2405217-008	WP2406895-006	WP2406895-007	WP2405217-009	WP2406895-010
Tellurium, total	0.0002	mg/L	0.00035	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	0.00001	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	0.0003	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, total	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	0.00001	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium, total	0.0005	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, total	0.003	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium, total	0.0002	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals (Water)							
Aluminum, dissolved	0.001	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Antimony, dissolved	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium, dissolved	0.0001	mg/L	0.00016	0.00079	<0.00010	<0.00010	<0.00010
Beryllium, dissolved	0.00002	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	0.00005	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	0.01	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, dissolved	0.000005	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium, dissolved	0.05	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Cesium, dissolved	0.00001	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, dissolved	0.0005	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	0.0002	mg/L	<0.00020	0.00025	<0.00020	<0.00020	<0.00020
Iron, dissolved	0.01	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Lead, dissolved	0.00005	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium, dissolved	0.001	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium, dissolved	0.005	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Manganese, dissolved	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	0.000005	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, dissolved	0.00005	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel, dissolved	0.0005	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, dissolved	0.05	mg/L	<0.050; <0.030	<0.050; <0.030	<0.050; <0.030	<0.050; <0.030	<0.050; <0.030
Potassium, dissolved	0.05	mg/L	0.052	0.057	<0.050	<0.050	<0.050
Rubidium, dissolved	0.0002	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Selenium, dissolved	0.00005	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon, dissolved	0.05	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Silver, dissolved	0.00001	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	0.05	mg/L	1.24	0.501	0.254	<0.050	<0.050
Strontium, dissolved	0.0002	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Sulfur, dissolved	0.5	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium, dissolved	0.0002	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	0.00001	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	0.0001	mg/L	0.00011	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, dissolved	0.0003	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, dissolved	0.0001	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	0.00001	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium, dissolved	0.0005	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	0.001	mg/L	0.0017	<0.0010	<0.0010	<0.0010	<0.0010
Zirconium, dissolved	0.0003	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Speciated Metals (Water)							
Methylmercury (as MeHg), dissolved	0.00002	µg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Chromium, hexavalent [Cr VI], total	0.0005	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Methylmercury (as MeHg), total	0.00002	µg/L	<0.000020	0.00005	<0.000020	<0.000020	<0.000020

Notes:

Shaded cells = values above the detection limit

Values denoted with "<" indicate the detection limit and that the analytical result was below the detection limit

FBA = Field Blank A; FBB = Field Blank B (filtration control blank)

Table A-2: Analytical Results of Field Duplicates for the February and March Surface Water Sampling Programs, Lynn Lake Gold Project

Parameter	Lowest Detection Limit	Units	AQM76-T50	QC-01	RPD	AQM76-T75	QC-01	RPD
			28-Feb-2024	28-Feb-2024		20-Mar-2024	20-Mar-2024	
			WP2405217-001	WP2405217-007		WP2406895-001	WP2406895-008	
Conductivity	1	µS/cm	29.1	30.2	**4%**	31.7	29.9	**6%**
Acidity (as CaCO3)	2	mg/L	5	4.1	**<5x DL**	4.1	2.9	**<5x DL**
Alkalinity, bicarbonate (as CaCO3)	2	mg/L	11	10.2	**8%**	11	10.2	**8%**
Alkalinity, carbonate (as CaCO3)	2	mg/L	<2.0	<2.0	**<5x DL**	<2.0	<2.0	**<5x DL**
Alkalinity, hydroxide (as CaCO3)	2	mg/L	<2.0	<2.0	**<5x DL**	<2.0	<2.0	**<5x DL**
Alkalinity, phenolphthalein (as CaCO3)	2	mg/L	<2.0	<2.0	**<5x DL**	<2.0	<2.0	**<5x DL**
Alkalinity, total (as CaCO3)	2	mg/L	11	10.2	**8%**	11	10.2	**8%**
Hardness (as CaCO3), dissolved	0.5	mg/L	10.6	10.8	**2%**	10.3	11	**6%**
Solids, total dissolved [TDS]	3	mg/L	21.6	24.2	**11%**	31.7	30.3	**5%**
Solids, total suspended [TSS]	1	mg/L	<1.0	<1.0	**<5x DL**	<1.0	<1.0	**<5x DL**
Turbidity	0.1	NTU	1	0.95	**5%**	1.15	1.07	**7%**
pH	0.1	pH units	6.83	6.82	**0%**	6.64	6.58	**1%**
Anions and Nutrients (Water)								
Ammonia, total (as N)	0.005	mg/L	0.0383	0.0299	**<5x DL**	0.0151	0.0139	**<5x DL**
Bromide	0.1	mg/L	<0.10	<0.10	**<5x DL**	<0.10	<0.10	**<5x DL**
Chloride	0.5	mg/L	<0.50	0.51	**<5x DL**	<0.50	<0.50	**<5x DL**
Fluoride	0.02	mg/L	0.06	0.06	**<5x DL**	0.056	0.06	**<5x DL**
Kjeldahl nitrogen, total [TKN]	0.05	mg/L	0.324	0.306	**6%**	0.309	0.321	**4%**
Nitrate (as N)	0.02	mg/L	0.101	0.112	**10%**	0.12	0.106	**13%**
Nitrate + Nitrite (as N)	0.02	mg/L	0.101	0.112	**<5x DL**	0.12	0.106	**<5x DL**
Nitrite (as N)	0.01	mg/L	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**
Phosphorus, total	0.002	mg/L	0.013	0.0137	**5%**	0.0134	0.0131	**2%**
Sulfate (as SO4)	0.3	mg/L	1.05	1.69	**38%**	1.17	1.08	**8%**
Cyanate	0.2	mg/L	<1.00	<1.00	**<5x DL**	<0.20	<0.20	**<5x DL**
Cyanides								
Cyanide, free	0.001	mg/L	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**
Cyanide, strong acid dissociable (Total)	0.001	mg/L	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**
Cyanide, weak acid dissociable	0.001	mg/L	<0.0010	<0.0010	**<5x DL**	<0.0010	<0.0010	**<5x DL**
Thiocyanate	0.5	mg/L	<0.50	<0.50	**<5x DL**	<0.50	<0.50	**<5x DL**
Organic / Inorganic Carbon (Water)								
Carbon, dissolved organic [DOC]	0.5	mg/L	8.03	8.45	**5%**	7.35	7.83	**6%**
Carbon, total organic [TOC]	0.5	mg/L	7.98	8.36	**5%**	7.32	7.81	**6%**
Total Metals (Water)								
Aluminum, total	0.003	mg/L	0.0162	0.0146	**<5x DL**	0.0148	0.0135	**<5x DL**
Antimony, total	0.0001	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Arsenic, total	0.0001	mg/L	0.0002	0.00019	**<5x DL**	0.00026	0.00028	**<5x DL**
Barium, total	0.0001	mg/L	0.00731	0.00729	**0%**	0.00726	0.00716	**1%**
Beryllium, total	0.00002	mg/L	<0.000020	<0.000020	**<5x DL**	<0.000020	<0.000020	**<5x DL**
Bismuth, total	0.00005	mg/L	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**
Boron, total	0.01	mg/L	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**
Cadmium, total	0.000005	mg/L	<0.0000050	<0.0000050	**<5x DL**	<0.0000050	<0.0000050	**<5x DL**
Calcium, total	0.05	mg/L	2.99	3	**0%**	3.03	2.97	**2%**
Cesium, total	0.00001	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Chromium, total	0.0005	mg/L	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Cobalt, total	0.0001	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Copper, total	0.0005	mg/L	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Iron, total	0.01	mg/L	0.227	0.227	**0%**	0.227	0.228	**0%**
Lead, total	0.00005	mg/L	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**
Lithium, total	0.001	mg/L	0.0014	0.0015	**<5x DL**	0.0014	0.0012	**<5x DL**
Magnesium, total	0.005	mg/L	0.844	0.839	**1%**	0.857	0.862	**1%**
Manganese, total	0.0001	mg/L	0.0168	0.0167	**1%**	0.0174	0.0174	**0%**
Mercury, total	0.000005	mg/L	<0.0000050	<0.0000050	**<5x DL**	<0.0000050	<0.0000050	**<5x DL**
Molybdenum, total	0.00005	mg/L	<0.000050	0.000054	**<5x DL**	<0.000050	<0.000050	**<5x DL**
Nickel, total	0.0005	mg/L	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Phosphorus, total	0.05	mg/L	<0.050 <0.030	<0.050 <0.030	**<5x DL**	<0.050 <0.030	<0.050 <0.030	**<5x DL**
Potassium, total	0.05	mg/L	0.72	0.72	**0%**	0.724	0.845	**14%**
Rubidium, total	0.0002	mg/L	0.00126	0.00121	**4%**	0.00128	0.00122	**5%**
Selenium, total	0.00005	mg/L	0.000066	0.000081	**<5x DL**	<0.000050	0.000068	**<5x DL**
Silicon, total	0.1	mg/L	4.11	4.11	**0%**	3.94	3.88	**2%**
Silver, total	0.00001	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Sodium, total	0.05	mg/L	1.34	1.38	**3%**	1.54	1.32	**17%**
Strontium, total	0.0002	mg/L	0.0151	0.0144	**5%**	0.0139	0.0136	**2%**
Sulfur, total	0.5	mg/L	<0.50	<0.50	**<5x DL**	0.51	0.58	**<5x DL**
Tellurium, total	0.0002	mg/L	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**
Thallium, total	0.00001	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Thorium, total	0.0001	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Tin, total	0.0001	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Titanium, total	0.0003	mg/L	0.00056	0.00055	**<5x DL**	0.00052	0.00046	**<5x DL**

Table A-2: Analytical Results of Field Duplicates for the February and March Surface Water Sampling Programs, Lynn Lake Gold Project

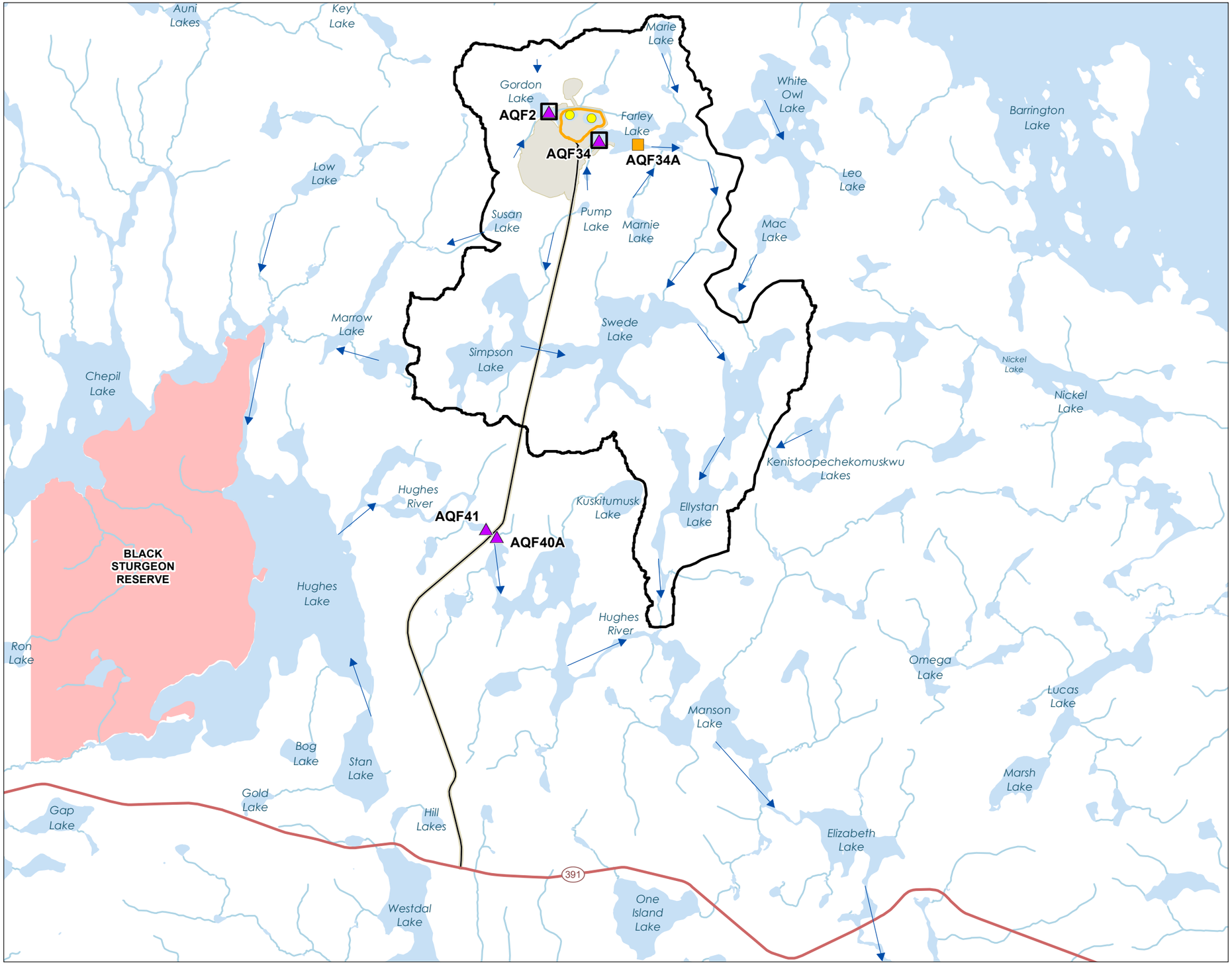
Parameter	Lowest Detection Limit	Units	AQM76-T50	QC-01	RPD	AQM76-T75	QC-01	RPD
			28-Feb-2024	28-Feb-2024		20-Mar-2024	20-Mar-2024	
			WP2405217-001	WP2405217-007		WP2406895-001	WP2406895-008	
Tungsten, total	0.0001	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Uranium, total	0.00001	mg/L	0.000017	0.000016	**<5x DL**	0.000018	0.000016	**<5x DL**
Vanadium, total	0.0005	mg/L	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Zinc, total	0.003	mg/L	<0.0030	<0.0030	**<5x DL**	<0.0030	<0.0030	**<5x DL**
Zirconium, total	0.0002	mg/L	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**
Dissolved Metals (Water)								
Aluminum, dissolved	0.001	mg/L	0.0045	0.0094	**<5x DL**	0.0061	0.0046	**<5x DL**
Antimony, dissolved	0.0001	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Arsenic, dissolved	0.0001	mg/L	0.00014	0.00013	**<5x DL**	0.00012	0.00014	**<5x DL**
Barium, dissolved	0.0001	mg/L	0.0073	0.00753	**3%**	0.00688	0.00736	**7%**
Beryllium, dissolved	0.00002	mg/L	<0.000020	<0.000020	**<5x DL**	<0.000020	<0.000020	**<5x DL**
Bismuth, dissolved	0.00005	mg/L	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**
Boron, dissolved	0.01	mg/L	<0.010	<0.010	**<5x DL**	<0.010	<0.010	**<5x DL**
Cadmium, dissolved	0.000005	mg/L	<0.0000050	<0.0000050	**<5x DL**	<0.0000050	<0.0000050	**<5x DL**
Calcium, dissolved	0.05	mg/L	2.9	2.97	**2%**	2.82	2.98	**5%**
Cesium, dissolved	0.00001	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Chromium, dissolved	0.0005	mg/L	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Cobalt, dissolved	0.0001	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Copper, dissolved	0.0002	mg/L	0.00033	0.00045	**<5x DL**	0.00034	0.00032	**<5x DL**
Iron, dissolved	0.01	mg/L	0.086	0.089	**3%**	0.12	0.142	**15%**
Lead, dissolved	0.00005	mg/L	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**
Lithium, dissolved	0.001	mg/L	0.0016	0.0014	**<5x DL**	0.0016	0.0012	**<5x DL**
Magnesium, dissolved	0.005	mg/L	0.817	0.81	**1%**	0.784	0.854	**8%**
Manganese, dissolved	0.0001	mg/L	0.0138	0.0136	**1%**	0.0142	0.0148	**4%**
Mercury, dissolved	0.000005	mg/L	<0.0000050	<0.0000050	**<5x DL**	<0.0000050	<0.0000050	**<5x DL**
Molybdenum, dissolved	0.00005	mg/L	<0.000050	<0.000050	**<5x DL**	<0.000050	0.00007	**<5x DL**
Nickel, dissolved	0.0005	mg/L	<0.00050	<0.00050	**<5x DL**	<0.00050	0.00091	**<5x DL**
Phosphorus, dissolved	0.05	mg/L	<0.050 <0.030	<0.050 <0.030	**<5x DL**	<0.050 <0.030	<0.050 <0.030	**<5x DL**
Potassium, dissolved	0.05	mg/L	0.671	0.703	**5%**	0.635	0.742	**14%**
Rubidium, dissolved	0.0002	mg/L	0.00118	0.00124	**5%**	0.00123	0.00114	**8%**
Selenium, dissolved	0.00005	mg/L	<0.000050	<0.000050	**<5x DL**	<0.000050	<0.000050	**<5x DL**
Silicon, dissolved	0.05	mg/L	3.82	3.74	**2%**	3.74	3.87	**3%**
Silver, dissolved	0.00001	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Sodium, dissolved	0.05	mg/L	1.23	1.38	**11%**	1.47	1.37	**7%**
Strontium, dissolved	0.0002	mg/L	0.0137	0.0145	**6%**	0.0135	0.0144	**6%**
Sulfur, dissolved	0.5	mg/L	<0.50	<0.50	**<5x DL**	1.05	<0.50	**<5x DL**
Tellurium, dissolved	0.0002	mg/L	<0.00020	<0.00020	**<5x DL**	<0.00020	<0.00020	**<5x DL**
Thallium, dissolved	0.00001	mg/L	<0.000010	<0.000010	**<5x DL**	<0.000010	<0.000010	**<5x DL**
Thorium, dissolved	0.0001	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Tin, dissolved	0.0001	mg/L	0.00014	0.00093	**<5x DL**	0.00079	<0.00010	**<5x DL**
Titanium, dissolved	0.0003	mg/L	<0.00030	0.00049	**<5x DL**	<0.00030	<0.00030	**<5x DL**
Tungsten, dissolved	0.0001	mg/L	<0.00010	<0.00010	**<5x DL**	<0.00010	<0.00010	**<5x DL**
Uranium, dissolved	0.00001	mg/L	0.000014	0.000014	**<5x DL**	0.000015	0.000014	**<5x DL**
Vanadium, dissolved	0.0005	mg/L	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Zinc, dissolved	0.001	mg/L	<0.0010	0.0026	**<5x DL**	<0.0010	<0.0010	**<5x DL**
Zirconium, dissolved	0.0003	mg/L	<0.00030	<0.00030	**<5x DL**	<0.00030	<0.00030	**<5x DL**
Speciated Metals (Water)								
Methylmercury (as MeHg), dissolved	0.00002	µg/L	<0.000200	<0.000020	**<5x DL**	0.000026	<0.000020	**<5x DL**
Chromium, hexavalent [Cr VI], total	0.0005	mg/L	<0.00050	<0.00050	**<5x DL**	<0.00050	<0.00050	**<5x DL**
Methylmercury (as MeHg), total	0.00002	µg/L	<0.000020	0.000021	**<5x DL**	<0.000020	<0.000020	**<5x DL**

Notes:

“RPD” = relative percent difference; calculated as: RPD = |result 1 – result2| / ((result 1 + result 2) ÷ 2) x 100

“<5x DL” = RPD not calculated due to reported concentrations being less than 5x the detection limit (DL)

Shaded cell = RPD > 20%



Stantec

Project Infrastructure
- Open Pit
- Project Development Area

Study Area
- Surface Water Local Assessment Area (LAA)

Sample Locations
- In situ only (monthly)
- In situ and grab sampling (monthly)
- Water Temperature Profile Location
- Vertical profile (once in Summer)

Landbase
- Existing Access
- Highway
- Surface Water Flow Direction
- Watercourse
- Waterbody
- First Nation Reserve

N

0 1 2 Kilometres
(At original document size of 11x17)
1:75,000

Notes
1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base Data Sources: Government of Manitoba and Government of Canada.

Project Location
Lynn Lake, Manitoba

Prepared by ACampigotto on 2024-02-14
Technical Review by TStainton on 2024-02-14

Client/Project
ALAMOS GOLD INC.
Lynn Lake Gold Project

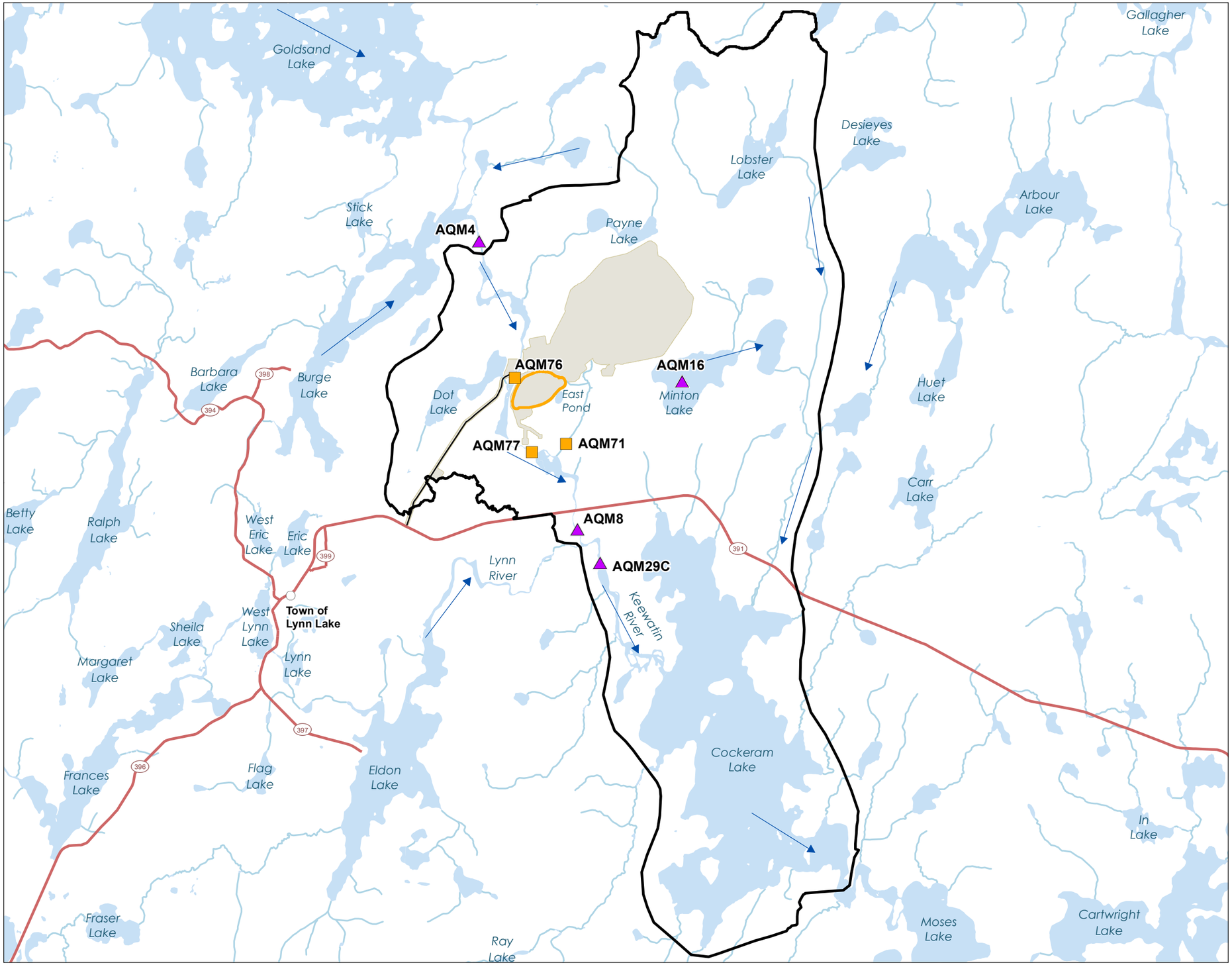
111473076

Map No.
1

DRAFT

Title
Proposed 2024 Surface Water Quality Monitoring Locations - Gordon Site

G:_GIS_Project_Folder\111473008_LGP_EA\R\1\SWQ_2024_Program\figures\Map1_Proposed_2024_SurfaceWaterQuality_Samples_Gordon_20240214.mxd Revised: 2024-02-14 By: ACampigotto



Stantec

Project Infrastructure
- Open Pit
- Project Development Area

Study Area
- Surface Water Local Assessment Area (LAA)

Sample Locations
- In situ only (monthly)
- In situ and grab sampling (monthly)

Landbase
- Existing Access Road
- Highway
- Surface Water Flow Direction
- Watercourse
- Waterbody

N

0 1.5 3 Kilometres
(At original document size of 11x17)
1:92,000

Notes
1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base Data Sources: Government of Manitoba and Government of Canada.

Project Location
Lynn Lake, Manitoba

Prepared by ACampigotto on 2024-02-14
Technical Review by TStainton on 2024-02-14

Client/Project
ALAMOS GOLD INC.
Lynn Lake Gold Project

111473076

Map No.
2

DRAFT

Title
Proposed 2024 Surface Water Quality Monitoring Locations - MacLellan Site

G:_GIS Project Folder\111473008_LGP_EA\R1\SWQ_2024_Program\Figures\Map2_Proposed_2024_SurfaceWaterQuality_Samples_MacLellan_20240214.mxd Revised: 2024-02-14 By: ACampigotto

ATTACHMENT NOC-02-02-D

Stantec

Memo

To:	Alamos Gold Inc.	From:	Stantec Consulting Ltd.
Project/File:	111473076	Date:	July 2, 2024

Reference: Lynn Lake Gold Project: Monitoring Program for Gordon Pit Dewatering to the Hughes River

1 Preamble

The Lynn Lake Gold Project (LLGP; or "the Project") consists of two historical deposit sites located near Lynn Lake, Manitoba: the 'Gordon' site and the 'MacLellan' site. Alamos Gold Inc. (Alamos) intends to redevelop, operate, and eventually close/reclaim open pit gold mines at these historical mine sites.

The Gordon site is located approximately 40 kilometres (km) east of Lynn Lake. This site was formerly operated as a two-pit, open-pit gold mine by Black Hawk Mining Inc. from 1996 to1999. After closure in 1999, the site underwent a reclamation process and the Wendy and East pits passively filled with water, forming pit lakes. The Wendy and East pits are approximately 60 metres (m) and 75 m deep, respectively. Wendy and East pits must be dewatered to enable Alamos to mine at the Gordon site.

The Impact Assessment Agency of Canada (IAAC) conducted an environmental assessment of the Project and prepared an Environmental Assessment Report (IAAC 2023). IAAC's Environmental Assessment Report includes Farley Lake as the receiving environment for the water from Wendy and East pits during construction of the Gordon site. Farley Lake flows into Farley Creek, which ultimately flows into the Hughes River (Figure 1, Attachment A).

The Federal Decision Statement for the Project was issued on March 5, 2023 with the determination that the Project is not likely to cause significant adverse environmental effects. The Province of Manitoba also issued Environment Act Licences for the Project (one for each site) on March 6, 2023.

In February 2024, Alamos submitted a Notice of Change application to IAAC and a Notice of Alteration application to the Province of Manitoba to amend the Federal Decision Statement and Gordon Gold Mine Environment Act Licence, respectively. This Notice of Change/Notice of Alteration (NOC/NOA) proposes dewatering East and Wendy pits directly to the Hughes River, instead of to the Hughes River through Farley Lake and Farley Creek. The purpose of the proposed change is to expedite the dewatering of the Wendy and East Pits to facilitate timely construction and start of operation at the Gordon site and to eliminate potential effects to fish and fish habitat in Farley Lake and Farley Creek during construction.

Field observations, along with baseline data collected in the Hughes River at the bridge location – the latter of which was input into a 2-Dimensional (2-D) hydraulic model (HEC-RAS) for this reach of the river - showed high velocity flow and water turbulence. During the open water season specifically (May to October), flow rates in the Hughes River at the bridge were estimated to range from a minimum of approximately 15 cubic metres per second (m^3/s) to a maximum of 215 m^3/s (Stantec 2023). Median flow

rates at the crossing during the open water season were estimated to range from approximately 22 m^3/s to 37 m^3/s. Full (or nearly-full) mixing of the dewatering water is anticipated to be rapid upon discharging to the Hughes River. This is because of the substantially larger flows of the Hughes River relative to the proposed discharge flow rate of the dewatering water.

As detailed in the NOC/NOA, a mass-balance water quality (mixing) model was conducted by Stantec Consulting Ltd. (Stantec) to further predict various concentrations in the Hughes River with the instantaneous mixing of the discharging water and river water. This model assumed instantaneous mixing and was developed specifically to investigate water quality and not hydraulic mixing. The dewatering discharge location in the Hughes River was selected due to Stantec's field experience at this location and was supported by the 2D hydraulic model developed for this location. Given the channel constriction at the proposed discharge location and the roughness provided by large boulders within the channel, Alamos is confident that the Project will meet the Manitoba Water Quality Standards, Objectives and Guidelines (2011) (MWQSOG) and Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (CWQG-FAL) with regards to the discharging water constituents of concern and mixing zone criteria.

As part of the anticipated dewatering of existing Wendy and East pit water to the Hughes River, Alamos will conduct a water quality monitoring program specifically designed to monitor – and respond to – potential Project-related changes to water quality in the Hughes River. This memo describes the water quality monitoring plan that is specifically designed for the pit dewatering activity.

2 Dewatering Design

The detailed design for the pit dewatering system will be determined after Alamos retains a dewatering contractor. A general plan for pit dewatering is discussed hereinafter.

A fish salvage of the pits will occur prior to pit dewatering. An aerator system will then be used to mix the stratified pits prior to dewatering. This aeration system will continue to operate during pit dewatering to maintain homogeneity of the pits and to prevent re-stratification. The 2022 East Pit Mixing Trial (Stantec 2022) indicated that East Pit (the larger of the two pits) can be fully mixed after 14 to 16 hours of aeration and homogeneity of the pit water (which meets guidelines allowing discharge to the environment) can be achieved.

During dewatering, pit water will be pumped through a hose line approximately 8 km to the Hughes River. The hose line will be located adjacent to the Gordon site access road (Figure 2, Attachment A). The intake will be positioned near the centre of the pit lake and above the pit lake bottom to avoid any potential sediment entrainment (Figure 3, Attachment A). The discharge point will be located immediately upstream of the Hughes River bridge to facilitate rapid mixing in the fast and turbulent water under and immediately downstream of the bridge (Figure 4, Attachment A). A diffuser will be used to assist in the dispersion and rapid mixing of the water at the discharge point in the Hughes River.

Approximately 2,100,000 m^3 of water will be pumped from the two pits, combined. Not all the water from the pits will be discharged to the Hughes River. By the nature of the intake positioning, some water will remain in the pits, which will be later pumped to the collection pond at the Gordon site rather than to Hughes River.

The one-time pit dewatering to the Hughes River will run 24 hours a day over approximately 3 months during the open water season (i.e., May to October) during construction. At the expected discharge rate from the hose set up (0.39 m^3/s), the use of a diffuser at the end of the discharge hose line, and the fast, turbulent flow in the Hughes River under and downstream of the Gordon site access road bridge crossing, the water discharging into the Hughes River is estimated to represent between 1 and 3% of the flow in the Hughes River. In other words, the Hughes River volume is two orders of magnitude greater than the expected pit dewatering flows, and therefore, the Hughes River water flows and quality dominate the predicted mixed flows.

Despite the anticipated instantaneous mixing of water in the immediate receiving environment, the monitoring program outlined in Section 3, below, is designed to determine water quality concentrations in the Hughes River downstream of the dewatering discharge location.

3 Monitoring Program

The purpose of the pit dewatering monitoring program is to characterize water quality prior to discharge to the Hughes River and to detect any potential changes in water quality in the Hughes River that may be resulting from pit dewatering. The data generated from dewatering and receiving environment water quality monitoring will be used to:

- Monitor potential spatial and temporal changes in water quality in the Hughes River downstream of the dewatering discharge location when compared with baseline water quality data and concurrently collected upstream reference data.
- Provide an indication of potential temporal variability in dewatering water quality.
- Provide a basis for calculating metal loadings in the receiving environment.
- Provide a basis for comparison with modelled water quality.

During pit dewatering, the monitoring program will involve sampling water from both pits (pre- and post-aeration) as well as the discharge water at end-of-pipe prior to mixing with the Hughes River. In addition, a Before-After-Control-Impact (BACI) design will be used to monitor Hughes River water quality upstream and downstream of the discharge point before, during, and after pit dewatering.

3.1 Monitoring Locations

The proposed locations of the sampling stations are described for the dewatering water (Section 3.1.1) and the receiving environment (Section 3.1.2) below. Table 1 summarizes the proposed monitoring locations and frequencies of the pit dewatering program.

3.1.1 DISCHARGE MONITORING LOCATIONS

A single water quality monitoring station will be positioned next to the Wendy and East pits at ground level (EFF1) to sample pumped pit water prior to flowing down the 8 km hose line to the Hughes River (see

Figure 2). Another monitoring station will be positioned on the bank of the Hughes River near the discharge point at the end of the hose line (EFF2) to sample water prior to discharging to the Hughes River (see Figure 4).

3.1.2 RECEIVING ENVIRONMENT LOCATIONS

In the receiving environment, monitoring stations will be positioned upstream and downstream of the discharge point at the Hughes River bridge (Figure 5, Attachment A).

This design of this program has been informed by the 2-D hydraulic model developed for this reach of the Hughes River. Prior to pit dewatering, however, a plume delineation study using a rhodamine tracer dye is proposed to help characterize the dimensions of the mixing zone and to inform potential refinement of this monitoring plan.

Currently, receiving environment sampling locations are proposed to be positioned: (1) upstream of the discharge location as a reference (for comparison with samples collected within the discharge plume); (2) where the discharge plume will likely be located downstream of the discharge location; and (3) where sample collection is safe and feasible. The final monitoring locations will be informed by the plume delineation study prior to the start of dewatering.

Due to the turbulence and width of the river downstream of the bridge (up to approximately 40 m to 50 m wide), the collection of grab samples from the centre of the river is unsafe. In consideration to safety of monitoring personnel, water quality sampling will be conducted at transects with two sampling positions at 25% to 30% of the river's width from either side and a centre grab sample via pole sampler (as feasible) to determine the extent of mixing and potential Project-related changes to water quality downstream of the discharge location.

Monitoring will occur at a transect located approximately 65 m upstream of the discharge location (i.e., reference transects REFA and REFB), at a "nearfield" transect immediately downstream of the bridge (HR1), and at "far-field" transects located approximately 25 m (HR2A and HR2B), 60 m (HR3A and HR3B), and 120 m (HR4A and HR4B) downstream of the bridge (see Figure 5). Table 1 lists the proposed sampling locations, frequencies, and parameters for dewatering and receiving environment water quality monitoring.

Table 1: Monitoring Locations, Frequency, and Parameters

<table>
<tr><th rowspan="2">Proposed Site</th><th rowspan="2">Approximate Location</th><th rowspan="2">Location Type and Rational</th><th colspan="2">Monitoring Frequency</th></tr>
<tr><th>During Dewatering</th><th>Before/After Dewatering</th></tr>
<tr><td>EFF1</td><td>Dewatering water; at sampling portal installed in hose near intake location</td><td>Dewatering water; to monitor water quality directly from pits</td><td rowspan="9">In situ: twice daily

Grab: every two weeks</td><td rowspan="2">N/A</td></tr>
<tr><td>EFF2</td><td>Dewatering water; at sampling portal installed in hose near discharge location</td><td>Dewatering water; to monitor water quality before mixing with Hughes River and to verify that water quality hasn’t changed since EFF1</td></tr>
<tr><td>REFA</td><td>Hughes River. Right side; 65 m u/s of discharge point.</td><td>Reference site; to compare exposed and unexposed water quality</td><td rowspan="7">In situ: weekly for 30 days (5-in-30)

Grab: every two weeks for 30 days (3-in-30)</td></tr>
<tr><td>REFB</td><td>Hughes River. Left side; 65 m u/s of discharge point.</td><td>Reference site; to compare exposed and unexposed water quality</td></tr>
<tr><td>HR1</td><td>Hughes River. Near-field site at narrows immediately downstream of bridge.</td><td>Receiving environment site to monitor potential Project-related effects within the initial mixing zone.</td></tr>
<tr><td>HR2A and HR2B</td><td>Transect. Hughes River, 25 m d/s of bridge. Right and left side (10-12 m from riverbank);</td><td rowspan="3">Receiving environment transect site to monitor potential Project-related effects</td></tr>
<tr><td>HR3A and HR3B</td><td>Transect. Hughes River. Right and left side; 60 m d/s of bridge</td></tr>
<tr><td>HR4A and HR4B</td><td>Transect. Hughes River. Right and left sides; 120 m d/s of bridge</td></tr>
<tr><td colspan="5">u/s = upstream
d/s = downstream</td></tr>
</table>

3.2 Monitoring Frequency and Duration

The proposed frequency of monitoring at discharge and receiving environment sites during pit dewatering is as follows:

- Twice-daily in situ monitoring to provide real-time data that can be used for adaptive management decision-making.
- Biweekly grab sample collection for laboratory analyses to provide water chemistry data for comparison with “before” data, upstream “reference” data and Canadian and Manitoba water quality guidelines (applicable to reference and receiving environment locations; not applicable to discharge location).

Monitoring in Hughes River at the reference and receiving environment locations is proposed before, during, and after pit dewatering to enable temporal comparisons of water quality, and to characterize potential Project-related effects. Monitoring over a period of 30 days before pit dewatering is proposed for each Hughes River site as follows:

- In situ sample collection will occur weekly such that 5 sampling events will occur within a 30-day period (i.e., 5-in-30)
- Grab sample collection will occur every two weeks such that 3 grab sampling events will occur within a 30-day period (i.e., 3-in-30)

Table 1 above summarizes the proposed monitoring locations, frequencies, and parameters included in the dewatering program.

3.3 Monitoring Parameters

Monitoring will include in situ measurements of water quality parameters (i.e., water temperature, dissolved oxygen, conductivity, pH, oxidation reduction potential, and total dissolved solids), and grab samples for laboratory analysis of standard general parameters (pH, acidity, alkalinity, conductivity, water hardness, dissolved organic carbon, total organic carbon, and total suspended solids), nutrients and major anions (ammonia, nitrite, nitrate, total Kjeldahl nitrogen, phosphorus, bromide, chloride, fluoride, sulphate), and total and dissolved metals.

3.4 Sampling Methods

Water sample collection will be performed according to the procedures for in situ measurements and surface grab samples described in Stantec’s Standard Operating Procedures (SOPs) and in the Protocols Manual for Water Quality Sampling in Canada (CCME 2011; Attachment B). Protocols for sampling from the riverbank of Hughes River will adhere to the CCME (2011) guidance.

For the collection of grab samples, sample preservatives will be added immediately after the bottle is full. Samples for dissolved organic carbon and dissolved metals, including dissolved mercury, will be filtered in the field within 15 minutes of sample collection.

In situ water quality measurements will be carried out using the following equipment:

- YSI Professional Plus Multi parameter Instrument: measures water temperature, pressure, dissolved oxygen, conductivity, pH, oxidation reduction potential, and total dissolved solids

- Hanna HI 98129 Tester (low range): measures water temperature and total dissolved solids
- LaMotte 2020we Portable Turbidity Meter: measures turbidity

All instruments will be calibrated in the field every second day and calibration results will be recorded on the appropriate calibration data sheet.

The field crew will maintain sample integrity by wearing powder-free nitrile gloves while collecting samples, filtering the samples through 45 µm filter disks, and using preservatives where appropriate, in accordance with the analytical laboratory instructions. If samples cannot be filtered in the field due to potentially high suspended solids concentrations, this will be recorded in the field notes and indicated on the chain of custody (COC) form.

The water samples will be shipped from Lynn Lake to ALS Laboratories in Winnipeg by Canada Post, Express mail, taking every step possible to meet sample holding times.

The field measurements and the sampling will be documented in accordance with Stantec standard operating procedures (SOPs). The following information will be recorded in All-Weather Environmental Field Books or on pre-printed field forms: project number, date/time, crew members, location, start time, weather conditions, GPS waypoint of sample site location in UTM grid, site name, photos of sampling location, sampling method, any activity or site information observed which could influence water quality (e.g. nearby construction activity, dust, streambank erosion, etc.). Additional information, including equipment malfunctions will also be documented.

All field-collected data will be transferred to Excel spreadsheets and reviewed daily. Laboratory results will be screened immediately upon their receipt using Stantec's screening criteria to identify any outliers, erroneous data, or violations of lab QA/QC procedures.

3.5 Quality Assurance/Quality Control

The quality assurance and quality control (QA/QC) measures for water quality sampling will include the collection and/or handling of field blanks, travel blanks, and duplicates. The methods involved with these measures are discussed below.

3.5.1 FIELD BLANKS

Field blanks will be used to detect potential grab sample cross-contamination during collection, handling, shipping, and analyses.

Field blanks will be prepared in the field. A set of sample bottles will be filled with deionized water provided from the laboratory (ALS). The field blank samples will then be exposed to the sampling environment at a site for as long as takes to fill the normal sample bottle with a water sample. Field blanks will be filtered and preserved, as required, following the same method as the water samples. In addition, a 'filtration control' field blank will be collected during monitoring. The filtration control field blank includes a filtration step so that potential contamination related to the field-filtration process (which may contribute to spurious results for dissolved metals) can be checked.

3.5.2 TRAVEL BLANKS

Field blanks will be used to assess the potential for cross-contamination of grab samples in the field or during transit. Travel blanks consist of laboratory-provided bottles that are pre-filled with deionized water and sealed. Travel blanks accompany water samples to and from the field and will be opened only when they arrived at the laboratory for analysis.

3.5.3 FIELD DUPLICATES

Field duplicates will be used to measure within-site variability and the precision of field methods and laboratory analyses.

Field duplicates will be collected at randomly selected sampling sites at a frequency of one duplicate sample per 10 water samples collected from the Project area. Duplicate samples will be prepared (i.e., filtered and preserved as required) and then submitted to the analytical laboratory. Duplicates will be submitted blind, without the location, name, or time indicated on the label, to measure within-site variability and the precision of field methods and laboratory analyses. Duplicate results will be compared to the original sample results using relative percent difference (RPD). The RPD is calculated as the absolute difference between the two measurements divided by the average of the measurements, as follows:

$$RPD = \frac{|result\ 1\ -\ result\ 2|}{(result\ 1 + result\ 2) \div 2}\ x\ 100$$

If the duplicate concentrations for a given parameter are greater than five times the parameter's detection limit (DL) and the RPD remains below 20%, then the duplicate sample RPD result for the parameter is not expected to adversely affect data quality.

3.6 Analysis and Reporting

Monitoring results will be compared with relevant MWQSOG and CWQG-FAL. In addition, results observed for the receiving environment during pit dewatering will be compared with the upstream reference sites as well as to baseline water quality collected prior to pit dewatering. Data collected after pit dewatering will be compared with data collected before and during pit dewatering. The data collected throughout the program will be analyzed to identify potential spatial and temporal trends.

Monthly field reports will be provided to Alamos throughout the monitoring program, including before, during, and after the pit dewatering. A final summary report will be provided following the completion of the monitoring program. Alamos will share the field reports and final summary report with Marcel Colomb First Nation (MCFN).

4 Adaptive Management

A trigger response plan (TRP) will be developed that will describe specific trigger thresholds and the adaptive management protocols that will be implemented should water quality monitoring during pit

dewatering show exceedances of the trigger thresholds. The TRP will describe the water quality parameters, trigger levels, and relevant response actions (e.g., pause of dewatering and discharges, management of water in the dewatering system, additional water quality monitoring, etc.) designed to limit or prevent adverse effects in the receiving environment. The water quality monitoring team and the dewatering contractor will be in close contact to facilitate the efficient communication of - and response to - exceeded trigger levels. Alamos will provide a draft TRP to MCFN for review and feedback prior to pit dewatering.

A Project-specific SOP will be developed by the dewatering contractor and will describe how the dewatering system will be monitored for accidents and malfunctions, how the system will be quickly and safely shut down in the event of an accident or malfunction, and what the relevant next steps and follow-up protocols will be in such cases.

5 Schedule

Pit dewatering is anticipated to occur during Project construction, within the open water season (May to October). Pit dewatering is anticipated to be 3 months in duration. The water quality monitoring program described herein will be approximately 5 months in duration. Water quality monitoring will occur before dewatering (one month), during dewatering (approximately three months), and after dewatering (one month).

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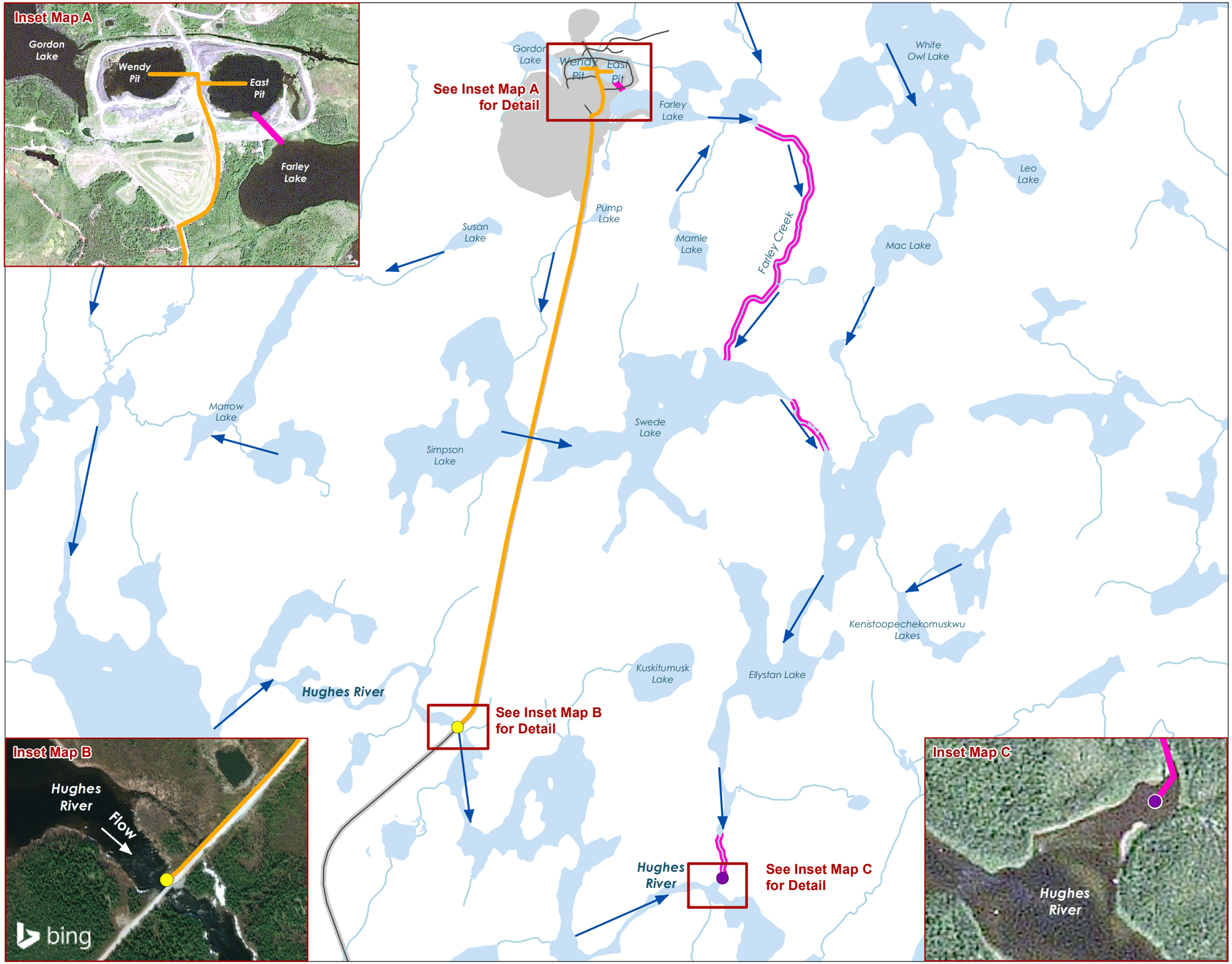
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Attachment A: Figures



Stantec

Project Infrastructure (NOA)

- NOA Project Development Area (PDA)

Proposed Infrastructure

- Discharge/Diffuser Location (NOA/NOC)
- Discharge Line (NOA/NOC)
- Discharge Point (EIS)
- Dewatering Route (EIS)

Landbase

- Existing Access Road
- Surface Water Flow Direction
- Watercourse
- Waterbody

N

0 500 1,000 Metres

(At original document size of 11x17)

1:47,500

Notes

1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base Data Sources: Government of Manitoba and Government of Canada.
3. NOA Project Infrastructure features provided by Worley via Alamos.

Project Location
Lynn Lake, Manitoba

Prepared by ACampigotto on 2024-06-26
Technical Review by KMathers on 2024-06-26

Client/Project
ALAMOS GOLD INC.
Lynn Lake Gold Project

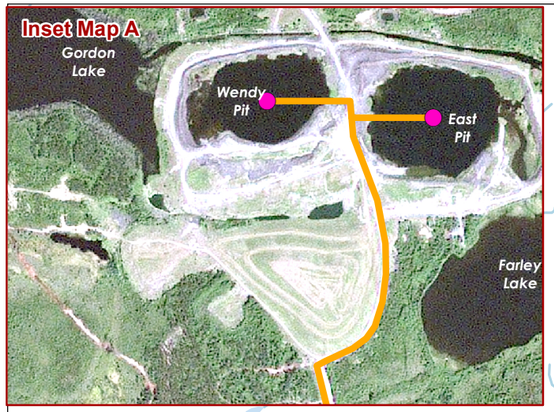
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Map No.
1

DRAFT

Title
Initial East and Wendy Pit Dewatering Route

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Stantec

Project Infrastructure (NOA)

- NOA Project Development Area (PDA)

Proposed Infrastructure

- Intake Locations
- Discharge/Diffuser Location
- Discharge Line

Landbase

- Gordon Site Acesss Road
- Watercourse
- Waterbody

N

0 490 980 Metres

(At original document size of 11x17)
1:40,000

Notes

1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base Data Sources: Government of Manitoba and Government of Canada.
3. NOA Project Infrastructure features provided by Worley via Alamos.
4. Aerial imagery base: KBM 2021 and Microsoft Bing.

Project Location
Lynn Lake, Manitoba

Prepared by ACampigotto on 2024-06-26
Technical Review by KMathers on 2024-06-26

Client/Project
ALAMOS GOLD INC.
Lynn Lake Gold Project

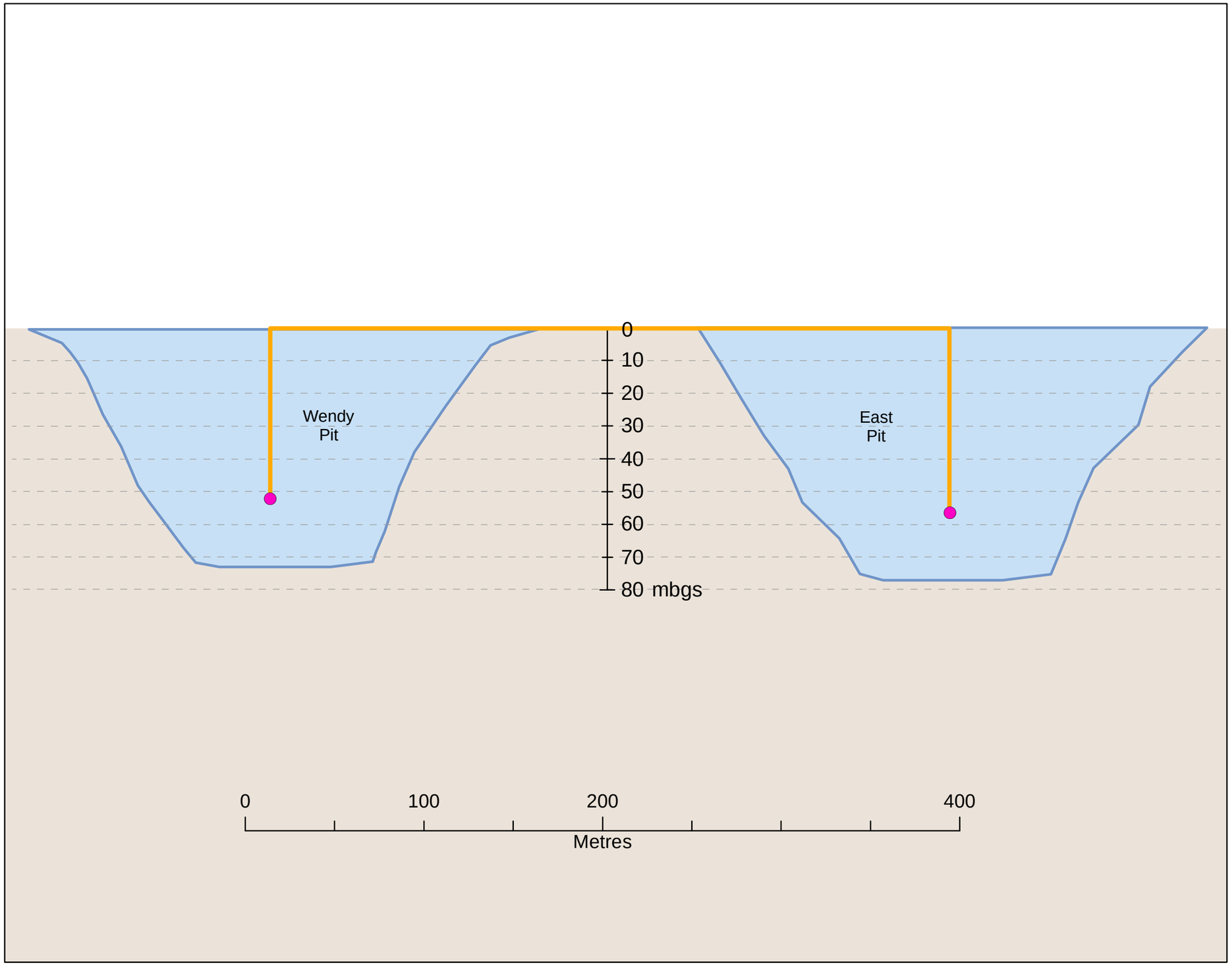
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Map No.
2

DRAFT

Title
Proposed Hose Line Route

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Stantec

Proposed Infrastructure

- Intake Locations
- Dewatering Pipeline
- Exisitng Waterbody

Notes

1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base Data Sources: Government of Manitoba and Government of Canada.

Project Location
Lynn Lake, Manitoba

Prepared by ACampigotto on 2024-06-26
Technical Review by KMathers on 2024-06-26

Client/Project
ALAMOS GOLD INC.
Lynn Lake Gold Project

111473076

Map No.
3

DRAFT

Title
Proposed Intake Depths

G:_GIS Project Folder\111473008_LGP_EA\IRs\Hughes_River_NOA\111473076_Map3_Proposed_intake_Locations_20240626.mxd Revised: 2024-06-26 by ACampigotto

View of Hughes River, looking upstream from the north abutment of the Hughes River bridge



View of Hughes River, looking downstream from the north abutment of the Hughes River bridge

Stantec

Proposed Infrastructure

- Discharge/Diffuser Location
- Proposed Dewatering Pipeline

N

0 12.5 25 50

Metres

Notes

1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base Data Sources: Government of Manitoba and Government of Canada.
3. NOA Project Infrastructure features provided by Worley via Alamos.
4. Aerial imagery base: KBM 2021 and Microsoft Bing.

Project Location
Lynn Lake, Manitoba

Prepared by ACampigotto on 2024-06-26
Technical Review by KMathers on 2024-06-26

Client/Project
ALAMOS GOLD INC.
Lynn Lake Gold Project

111473076

Map No.
4

DRAFT

Title
Proposed Discharge Location at the Hughes River Bridge

G:\ GIS Project Folder\111472808 LLGP EA\IRs\Hughes River NOA\111473076 Map4 Proposed Discharge at Hughes River Bridge_20240626.mxd Revised: 2024-06-26 By: ACampigotto



Stantec

Proposed Infrastructure

- Proposed Water Quality Monitoring Location
- Discharge/Diffuser Location
- Proposed Dewatering Pipeline

N

0 12.5 25 50

Metres

Notes

1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base Data Sources: Government of Manitoba and Government of Canada.
3. NOA Project Infrastructure features provided by Worley via Alamos.
4. Aerial imagery base: KBM 2021 and Microsoft Bing.

Project Location
Lynn Lake, Manitoba

Prepared by ACampigotto on 2024-06-26
Technical Review by BHorne on 2024-06-26

Client/Project
ALAMOS GOLD INC.
Lynn Lake Gold Project

111473076

Map No.
5

DRAFT

Title
Water Quality Monitoring Locations in the Hughes River upstream and downstream of the pit dewatering effluent discharge location

G:\ GIS Project Folder\111472808 LLGP EA\Brs\Hughes River NOA\111473076 Mxds\WaterQuality\Sampling_HughesRiver_with_discharge_20240626.mxd Revised: 2024-06-26 By: ACampigotto

Reference: Lynn Lake Gold Project: Monitoring Program for Gordon Pit Dewatering to the Hughes River

Attachment B: Canadian Council of Ministers of the Environment Water Quality Sampling Protocols

CCME

Canadian Council of Ministers of the Environment | Le Conseil canadien des ministres de l'environnement

PROTOCOLS MANUAL FOR WATER QUALITY SAMPLING IN CANADA

PN 1461

ISBN 978-1-896997- 7-0 PDF

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Note: Figures redrawn by DoMo Communications Management to ensure consistency of appearance.

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HOW TO USE THIS MANUAL

This manual is intended to help users find appropriate protocols that can be used for water quality sampling in Canada. It includes new technologies and methods such as microbial source tracking and continuous water quality monitoring, along with other established methods. The manual covers all aspects of physical, chemical and biological sampling for a variety of aquatic habitats (lakes, rivers, streams, wetlands) and biota (fish, benthos, plankton, etc).

Modifications to jurisdiction specified sampling procedures/protocols should be approved by that jurisdiction before any sampling program is undertaken. Original protocols referenced through out this manual should be consulted in order to obtain more detailed information.

1.0 INTRODUCTION

The Canadian Council of Ministers of the Environment (CCME) through the Water Quality Task Group identified a need for water monitoring guidance. This sampling manual will provide a Canada-wide consistency in water monitoring.

In Canada, water quality monitoring and surveillance activities are being conducted by a broad range of practitioners. Federal, provincial, territorial and many municipal governments operate water quality monitoring networks for various reasons, and some of these networks include the collection of other types of samples (e.g., sediments) that maximize the information for the questions that are to be answered by the program. Water quality monitoring programs are often designed to determine if water is of acceptable quality for drinking, swimming, irrigation, or aquatic habitat. This can be assessed using guidelines such as those published through the CCME (1999). Monitoring programs may also be designed to determine if water quality is improving or deteriorating over time, and to identify what is causing the impact and/or deterioration of a river, stream or lake.

In May 2001, CCME Ministers agreed to link existing water quality monitoring networks in order to ensure that Canadians have access to comprehensive information on the quality and safety of water. In response, a Monitoring Sub-Group was formed under the CCME Water Quality Task Group (WQTG) to carry out this task.

In July 2006, the Monitoring Sub-Group of the Water Quality Task Group produced a document titled *A Canada-wide Framework for Water Quality Monitoring.* That report introduced several concepts and information related to water quality monitoring that could lead to Canada-wide consistency, comparability and efficiency. The report recommended the development of several companion technical documents to further this work, including one which describes and catalogues water quality sampling methods.

In early 2008, the WQTG Monitoring Sub-Group completed the first step in developing a Canada-wide guidance manual on water quality sampling, which was to inventory all of

the existing sampling protocols and methods being employed by federal, provincial and territorial jurisdictions.

The objectives for this sampling manual are to provide users with:

- An integrated guidance manual of sampling protocols for water quality monitoring in Canada in order to increase consistency across Canada;
- An understanding of the main principles of ambient fresh water quality monitoring of lakes and streams, including collection of representative samples for each case so that scientific judgment can be applied for certain monitoring programs where it may not be appropriate (due to logistics, use of certain laboratories, or where a program has different objectives, etc.) to follow all aspects of certain protocols;
- An understanding of why different sensors are used in monitoring, and the need for proper calibration of each; and
- The ability to apply the understanding gained through the theoretical discussion and the practical real-life examples to sampling streams and lakes in a safe and accurate manner.

1.1 WATER QUALITY SAMPLING – IMPORTANCE OF PROPER SAMPLE COLLECTION TO ACHIEVE RESULTS

When gathering ambient water quality samples, it is crucial that samples be collected in a consistent and proper manner with the appropriate equipment, so the analytical results or field measurements will reflect the environmental conditions at the time of sampling.

There is the potential during any sampling effort, to inadvertently generate sampling errors. They may be themselves minute in nature. However, several errors can combine into one significant error from any one sample collection. This can lead to poor samples collected, money wasted to test the poor samples, erroneous results generated, and lead to poor conclusions derived.

Inter-relationships of Different Variables

When testing water quality in an ambient sample, there is a wide array of potential assays from which to choose, and many provide the same information. In other situations, in order to fully understand the significance of one variable, it may be necessary to test a variety of variables this can maximize the interpretation of the data. This section will describe several of these variables.

Parameters measured in-situ

Specific variables should be tested in the field, this can be completed by using a hand-held meter or any other additional field technology. Specific variables can also be tested in a laboratory environment with the correct equipment. The purpose of the apparent duplication is that there is potential for the sample to change state during transport from the field to the laboratory.

The ***sample temperature*** should be collected immediately from a standalone sample, no other variables should be tested from this sample. ***Dissolved oxygen*** concentrations may be tested by either an appropriate DO meter or by using the laboratory process, the Winkler titration. ***pH*** and ***specific conductivity*** should be measured in the field to capture any sample change during transportation to the laboratory. ***Turbidity*** is frequently measured in the field, this can be achieved through a continuous process throughout the sampling period.

Parameters measured in laboratories

Laboratories can provide additional testing methods for samples. This allows several types of parameters to be analyzed in a sample. Generally, the analysis includes what are deemed as conventional parameters (pH, specific conductivity, hardness, and turbidity), solids (total, suspended, dissolved, inorganic, and organic), nutrients (such as different forms of nitrogen, phosphorus, and carbon), metals (measured as total, dissolved, or extractable), pesticides, and more complex organic compounds such as PCBs, PAHs, dioxins and furans, and many others. For a detailed description of standard analytical methods for these parameters see Eaton *et al*. (2005).

Variable (s)	**Second Variable (s)**	**Relationship**
Specific Conductivity (SC)	Dissolved Solids (TDS)	SC and TDS are usually related for each water body. TDS is the sum of constituents such as chloride, sulphate, etc.
Turbidity	Suspended Solids (TSS)	Turbidity can be related to the amount of solids in suspension
Temperature	Dissolved Oxygen	The amount of oxygen in water increases with cooler temperatures.
pH and Temperature	Ammonia	The toxicity of ammonia in water increases with higher pH and temperatures
Secchi Disc Reading	Turbidity, colour, algae	Measures light penetration in a lake that is reduced by these three factors
Chloride	Nitrite	The toxicity of nitrite in water decreases with increased chloride
Hardness	Alkalinity	Alkalinity and hardness often have similar concentrations in water
Hardness, Dissolved Organic Carbon (DOC)	Metals	The toxicity of some metals (e.g., copper, zinc) decreases with increasing hardness and DOC

Table 1 – Summary of inter-relationships of some key variables

As mentioned, variables such as ***pH, specific conductivity***, and ***turbidity*** should be measured in the field and again upon receipt in the laboratory, this will determine whether the sample has changed during transport. It is usual for the laboratory to measure the ***temperature of a sample upon arrival***. Temperature is an excellent indicator to identifiy if the samples have been shipped correctly (i.e. with enough ice for ambient air conditions). Samples collected during the winter months will naturally be at a lower temperature to start and generally will not require the same amount of packaging as samples collected during summer months. Care should be taken when packaging samples in winter months in ensuring that the sample containers do not freeze and rupture, in turn destroying the integrity of the sample. In cases where temperatures are expected to be below freezing, collapsible jugs of warm water should be added to the packaging in order to prevent samples from freezing and possibly breaking in transport. This is particularly important when samples are shipped as cargo by bus or plane.

Sample hold times

Each parameter has a specific hold time that ensures the results generated are accurate. If this maximum time frame (i.e. hours or days) has passed, the data generated through sample analysis should not be used since its accuracy cannot be confirmed. Some variables must be analyzed within 48 or 72 hours from the time of collection (referred to

as holding time) It is essential that samples be shipped to the laboratory as soon as possible. It is important to avoid a lengthy time delay before laboratory analysis. It may be necessary to ship the sample on the same day as collection to preserve the variables. It is the responsibility of the sampler to determine which variables are time sensitive and ensure the hold times are met. When shipping samples, aim to maintain the shipment temperature between 10°C and 4°C, temperature ranges may require adjustment with specific sample parameters. Temperature control for shipping during warmer months can be through ice packs placed in the coolers. During winter months care (i.e. heat packs) should be taken to prevent freezing of the samples.

Description of key variables

It should be noted that ***specific conductivity*** is often used as a surrogate measurement for ***dissolved solids***. The actual relationship between these two variables will be site specific and based on the water body. Both specific conductivity and dissolved solids provide a measure of the contribution of different salts that may be present in the sample; this may include ***potassium***, ***sodium***, ***chloride***, ***sulphate*** and others.

Turbidity is a measure of the light penetration in the sample. The turbidity of the sample depends on the size and distribution of the suspended solids in a sample. Turbidity and specific conductivity can provide estimates of the amounts of suspended or dissolved solids that may be present, however they can not be used as absolute replacement measurements for the more specific test. For sites with sufficient enough data, it is possible to identify a significant site specific relationship between turbidity and total suspended solids. The relationship should be reviewed overtime as the water body changes. Understanding the connection between turbidity and total suspended solids is important. If turbidity is a known variable and TSS is unknown, one can calculate the existence of the TSS using the turbidity levels.

Other tests require accompanying measures of other variables. When ***metals*** are measured, interpreting the results sometimes requires knowledge of the ***hardness*** and/or the ***organic carbon*** concentration in the sample. The toxicity of some metals is reduced with increasing hardness or organic carbon concentrations.

To interpret the impact that ***ammonia*** might have in a water body, knowledge of the ***pH*** and ***temperature*** is also necessary. The toxicity of ammonia decreases at lower temperatures and pH values, therefore these variables must be measured and recorded. Similarly, the impact of ***nitrite*** is ameliorated at higher concentrations of ***chloride***.

1.2 CERTIFICATION AND CHOOSING A LABORATORY

In Canada, laboratories can enter voluntary certification programs that can provide proof of competency in the analysis of parameters of concern. In Canada, the major provider of such services is the Canadian Association for Laboratory Accreditation (CALA). Some provinces such as Quebec have a separate accreditation program. The goal of CALA is to help laboratories achieve and demonstrate the highest levels of scientific and management excellence through the combined principles of competence, consistency, credibility and communication. The advantages to a person conducting analytical

monitoring in using a laboratory that has been accredited by CALA is that they can be confident that the laboratory has the ability to provide accurate and precise analytical measurements.

Laboratories receive accreditation on a test-by-test basis for specific matrices (e.g., ambient waters, wastewaters, etc.). What this means is that a laboratory may receive accreditation for the performance of one test (for example, copper) in one media but might not have accreditation for another test (for example, zinc) in the same or different media. The reason for this is that first, the laboratory must apply for accreditation in each test, and, second, they may not meet the standards that are applied by the accrediting agency. Therefore, when selecting a laboratory for testing, you must ensure that they have accreditation in the media and for the parameters that you are interested in.

Generally, all organizations that grant accreditation for testing require that laboratories illustrate proficiency by undertaking proficiency testing. Proficiency testing is defined as the use of inter-laboratory comparisons to determine the performance of individual laboratories for specific tests or measurements.



Photo 1. Proficiency testing samples sent to laboratories (Courtesy: L. Swain, Tri-Star Environmental Consulting)

Disciplines	**Matrices**
inorganic chemistry	water, waste oil, soil/sediment, air collection media (e.g. quartz and cellulose acetate filters, and charcoal tubes) and asbestos testing
organic chemistry	water, waste oil, soil/sediment, air collection media (e.g. quartz and cellulose acetate filters, and charcoal tubes) and asbestos testing
toxicology	water, waste oil, soil/sediment
occupational health	air collection media (e.g. quartz and cellulose acetate filters, and charcoal tubes) and asbestos testing
microbiology	Water, soil/sediment

Table 2 – Disciplines and matrices available for CALA accreditation[1]

[1] http://www.cala.ca/index.html

For CALA, the Proficiency Testing (PT) Program targets high volume testing in the disciplines of inorganic chemistry, organic chemistry, toxicology, occupational health and microbiology for the following matrices: water, waste oil, soil/sediment, air collection media (e.g. quartz and cellulose acetate filters, and charcoal tubes) and asbestos testing. CALA indicates that a laboratory has acceptable performance for a test should the PT score $\geq$70. If scores less than 70 are attained, then the following consequences result:

- one non acceptable result = possible suspension (PS) of accreditation
- two successive non-acceptable result = suspension (S) of accreditation
- three successive non-acceptable result = withdrawal (W) of accreditation

Laboratories often offer "package" tests for certain matrices, such as metals and pesticides, and care must be taken in choosing the method. For a detailed discussion of standard analytical methods see Eaton *et al*. 2005. In selecting a method, consideration must be given to the detection limit of the method in question and the corresponding water quality guideline against which the data may be assessed. In general, detection limits should be five to ten times lower than the guideline that will be used for comparison, and/or the levels being measured, in order to ensure that there are no false-positive values. Some laboratories are better suited for analyzing ambient samples and this can be determined from their PT studies.



Photo 2. Accreditation certificates at a laboratory (Courtesy: L. Swain, Tri-Star Environmental Consulting)

1.3 QUALITY ASSURANCE/CONTROL IN SAMPLING

Improper sampling techniques can lead to non-representative test results, which do not represent the media/matrix being sampled. Improper sampling techniques can lead to erroneous conclusions and management actions. Non-representative test results are also

possible if adequate care and control is not taken during collection of the sample or the laboratory analysis of the sample.

A field quality assurance program is a systematic process, and together with a laboratory and data storage quality assurance program, ensures a specified degree of confidence in the data collected for an environmental survey.

The first step in ensuring proper sampling techniques is to provide staff with training for the sampling conditions they encounter. A sampling plan should also be established for each program or investigation. The sampling plan should outline such items as:

- when samples are to be collected (weekly, bi-weekly, monthly, quarterly, etc),
- where samples are to be collected,
- types of sample collection devices and containers to be used,
- what types of samples are to be collected at each site,
- which method to use,
- how these samples should be preserved,
- which field measurements (and notes) are to be made, and
- which laboratories the samples are to be shipped to.

Hard copies of sampling plans should be carried into the field with the contact name and information of the principal investigator to be contacted should questions arise in the field. A sampling plan ensures that all data are collected to the same standard using the same protocols. A sampling plan should contain enough detail for substitute field personnel to carry out the program/survey/investigation.

Sample bottles should be kept in a clean environment, away from dust, dirt, fumes and grime. As well, bottles must be capped at all times and stored in clean shipping containers (coolers) both before and after the collection of the sample. Vehicle cleanliness is an important factor in eliminating contamination problems (RISC 1994).

As stated previously samples must never be permitted to get warm and should be stored in a cool, dark place. Most samples must be cooled to 4 to 10°C during transit to the laboratory; ensure copious quantities of ice packs or dry ice are used to keep samples cool. Samples should be cooled as quickly as possible in order to reduce biological and chemical activity in the sample. Alternatively, during colder months, precautions must be taken to prevent samples from freezing. Collapsible jugs of warm water should be added to shipping containers to unsure the samples remain between 4 and 10 °C.

Sample collectors should keep their hands clean, wear gloves when sampling and refrain from eating or smoking while working with water samples. Exhaust fumes and cigarette smoke can contaminate samples with lead and other heavy metals. Air conditioning units are also a source of trace metal contamination.

Van Dorn bottles, dissolved oxygen samplers for grab samples and composite samplers need to be properly washed and rinsed. Hoses for composite samplers need to be cleaned as well since residual quantities can accumulate if the hoses are not properly maintained.

Field measurements should always be made *in-situ* or using a separate sub-sample, which is then discarded once the measurements have been made. They should never be made on a water sample that is returned to the analytical laboratory for further chemical analyses. For example, specific conductivity should never be measured in sample water that was first used for pH measurements. Potassium chloride diffusing from the pH probe alters the conductivity of the sample. Similarly, pH should not be measured from a sample that will be analyzed for phosphorus, as some pH buffers contain phosphorus. Use a separate bottle for water temperature if not *in-situ*. Dissolved oxygen measurements (by DO probe) should be made *in-situ* rather than in a separate container (Resource Inventory Standards Committee (RISC), 1994)

Often, sample containers provided by the laboratory for analyses will be "certified" as being contaminant-free. In some situations upon the advice from the laboratory, sample bottles need not be rinsed with the sample water being collected. Bottles must be supplied with cap in place. Cleaned re-used bottles are not suitable for some trace constituents.

Types of Water Quality Sampling Quality Assurance/Quality Control (QA/QC) Samples

Quality control samples are used to verify the integrity of water samples. For example, blank samples (generally de-ionized water) can be used to determine if contamination might enter a water sample in the transport (trip blank) or the entire sampling process (field blank). **Blank** samples are used:

1) to test the purity of chemical preservatives;
2) to check for contamination of sample containers, filter papers, filtering equipment or any other equipment that is used in sample collection, handling or transportation;
3) to detect contamination that occurs during sampling, and
4) to detect other systematic and random errors occurring from the time of the sampling to the time of analysis.

Trip blanks are usually prepared in the laboratory and simply travel with the sample bottles from the laboratory to the sampler, to the sample site, and then back to the laboratory without ever being opened. These trip blanks indicate contamination within the bottle or from volatile compounds. Alberta Environment (2006b) recommends one per trip.

In contrast, **a field blank sample** is prepared in the same manner as a trip blank and makes the journey as a trip blank; however, the difference arises when sampling occurs. During the sampling process, the field blank sample is opened and the collection process is mimicked. These measure contamination from bottles, collection methods, the atmosphere, and preservatives. Alberta Environment (2006) recommends one for every ten regular samples. B.C. Environment (2003) recommends a minimum of one field blank per sample set, or one field blank per day per collection apparatus. A practical approach is to take a full suite of blanks but only initially analyze the field blanks. If the field blanks don′t indicate problems, the other blanks (e.g. travel, filtration, equipment) may be discarded or stored.

Filtration blanks should be used regularly or as a minimum, when contamination is suspected. These measure contamination from the filters, and the filtration apparatus.

Bottle blanks measure contamination from improper cleaning of bottles. Both filtration and bottle blanks should only be used on an as-needed basis.

In addition, more than one sample may be collected from the same sampling device (**replicate sample**) at the same time as the original sample to determine the precision (how close the results are to each other) of tests. Field replicates provide precision of field plus laboratory plus environmental heterogeneity. Environmental heterogeneity can be eliminated by collecting one sample which is then split. In some cases, it may be impossible to collect replicate samples at exactly the same time as the original sample. In such cases, these replicates are deemed to be co-located samples. For a true estimate of precision, the co-located samples should be submitted at separate time intervals (if possible in time period). Generally, one duplicate should be collected per sample set (BC Environment 2003) or for every ten regular samples (Alberta Environment (2006b)).

Finally, **standard reference materials** or samples (where the actual value has been certified independently) are used to determine if the results are accurate (close to the true value). These are not often used by field staff; however, these can be used when special circumstances dictate (e.g., use of a new laboratory where one is uncertain of its analytical capabilities, beginning of the field season, new project, etc.). Values should be within the certified ranges for the standard reference material.

Typically the total number of QA/QC samples should represent a minimum of 10% of the total number of samples (Alberta Environment (2006b)) although others suggest higher levels in the order of 20%. They should include at a minimum, the collection and analysis of field duplicate samples and split samples. QA/QC samples may also include equipment blanks, field blanks, triplicate samples and field spikes.

The test laboratory itself usually will have similar processes in-place to ensure that results that were reported can be reproduced. These will include training plans for staff, analysis plans for each analyte to be tested, quality control samples to ensure that there is no contamination (analysis blanks) occurring in the laboratory, that the results are precise (replicates), and that the results are accurate (use of standard reference materials and percent recoveries). The amount of quality assurance provided by any laboratory should be available upon request. As well, the results of quality control samples analyzed at the same time as your samples should be available and should be obtained in order that the results can be interpreted later.

The initial amount of samples allocated to QA/QC depends on:

1. **Level of experience of the field staff and familiarity with the analyzing laboratory**. When both the laboratory and field staff are unfamiliar with the design of the program, funds directed towards QA/QC should be divided equally between the two. On the other hand, if either has demonstrated consistency and reliability in the past, then funding requirements can be decreased for that component.

2. **The type of program**. Impact assessment and survey (or baseline) monitoring generally require more QA/QC funds than compliance and trend monitoring. Compliance monitoring is usually conducted as an extension of an existing monitoring program so that previous QA/QC efforts likely have established a satisfactory degree of accuracy and precision. For trend monitoring, there usually is more consistency in the field, personnel, and laboratory analytical techniques. Personnel and equipment techniques will be used at the same locations on a regular schedule during an extended period of time.
3. **State of water quality**. There is no need to invest significant funds for QA/QC when the values obtained for particular variables are consistently well above the minimum detectable limit (MDL). When values are well above the MDL, a false positive is highly unlikely, and therefore the funds might be of better use if directed elsewhere (e.g., towards more frequent monitoring). When values are well below the level of concern for protection of the designated water, a portion of the budget might be of better use when allocated to a separate program (i.e., a different watershed that is of higher priority).

Types of Biological QA/QC Samples

Replicate Samples: Biological replicate samples can consist of multiple samples (grabs, tows, or whole fish) from the same general area (to measure how well a single sample represents the community or how many samples are necessary to achieve some level of sampling confidence), or portions of a single sample (i.e., sectioned grabs - to measure more localized invertebrate heterogeneity).

Split Samples: Split samples are aliquots taken from the same container and assumed to be identical. These samples can be sent to two or more laboratories for separate analysis and the results can be used to determine inter-laboratory variability or the consistency of results within one laboratory.

Reference Samples: Laboratory-tested and preserved reference materials are available for tissue samples. For example, the National Research Council of Canada (NRC) has dogfish liver and muscle tissue and lobster hepatopancreas tissue for the determination of trace elements and organo-mercury. These reference tissues have been subjected to a large number of analyses performed by independent laboratories using several different analytical techniques. Consequently, the NRC provides mean values and confidence intervals for these substances. Other reference tissues are available from other sources.

Taxonomy Samples: Basic taxonomic reference materials are available for taxonomy samples. The US EPA is a source for taxonomy samples in reference to algal taxonomy, chlorophyll-a and several bacterial species. These reference samples should be submitted to the analyzing laboratory along with the samples collected during a field trip. They should be transferred to a regular sample container and labeled with plausible site names and numbers (the codes used for identification must be documented in the field logbook).

As well, taxonomic reference materials can be created for various regions by generating a ‘reference collection’ or ‘voucher specimen’ collection that has been independently

verified by an external expert. There should be a minimum number of samples from the survey/study that are re-counted and re-identified by a second taxonomist to get an estimate of identification error and count error.

Understanding QA Results

The QA data results should be evaluated for completeness. This includes providing a summary of the planned and actual QA procedures undertaken and a summary of the metadata on a variable-by-variable basis to indicate the success in obtaining and storing the data. This requires verification of a minimum of 10% of the laboratory results received via electronic transfer with results forwarded separately, usually in hard copy, within seven days of receiving the analytical results.

It should be determined if contamination is present in the samples. The general rule of thumb is that levels are acceptable if there are less than or equal to 5% of *blanks* with values greater than the detection limit (network-wide).

Precision is deemed to be acceptable if there is <25% relative difference or <18% coefficient of variation, when the mean of the *replicates* is ≥ 10 MDL, and results are ≥ 10 MDL if the analytical methods are different. The Relative % Difference is defined as:

$$\text{Relative \% difference} = \frac{(S_2-S_1)}{[(S_1+S_2)/2]} * 100\%$$

where S_1 and S_2 are the sample results

and for triplicates (or greater) use Relative Standard Deviation (RSD):

$$RSD = SD/(S_1+S_2\ldots+S_n)/n$$

where S_1, S_2 and S_n are the sample results
and SD is the standard deviation

The coefficient of variation is defined as:

$$\text{Coefficient of variation} = \frac{SD}{[(S_1+S_2)/2]}$$

where S_1, and S_2 are the sample results
and SD is the standard deviation

Detection Levels are considered to be good if ≥ 50% of values ≥ 3 MDL and MDL ≤ 0.1 of the lowest relevant water quality objective or guideline.

An example of the QA used in the Canada - British Columbia Water Quality Monitoring Agreement is shown below for one station (Table 3). It should be noted that 30 samples (26 + 2*2) are to be collected at the station each year, and that there are six rounds of QA samples submitted. This is a minimum 20% level of QA consisting of field replicates and field blanks (including filtration blanks and replicates where appropriate).

Variable	Annual Frequency	QA Frequency
Alkalinity	26	6
Metals Trace	26	6
pH	26	6
Temperature	26	6
Turbidity	26	6

Table 3 – An example of the level of QA required for one station under the B.C. – Canada Water Quality Monitoring Agreement

2.0 GENERAL PROTOCOLS FOR SAFETY IN SAMPLING

Overview

It is crucial that samples are collected in a safe manner. This includes having first aid equipment, communication equipment, survival gear, wearing proper footwear, gloves, life jackets or flotation devices, reflective jackets, and personal safety devices for confined entry situations. It also means that samples usually are collected by teams of two individuals, one of whom is the support person who can provide help to the other should the sampler encounter an unsafe situation from which they cannot remove themselves. The field crew must be trained for the situations to be encountered; experienced with the proposed program and the potential hazards; a detailed job safety analysis must be prepared, this should include very specific emergency response plans; and the crew must be aware of any special safety considerations. Basic information is provided here.

Sources

Environment Canada and B.C. WLAP (2005 (c)), Alberta Environment (2006), Environment Canada (2006 b), Environment Canada (2007)

At a glance

gloves as protection

1 Samples should be collected using latex or plastic gloves in order to protect the sampler from contaminants in the ambient waters, and from coming into contact with preservatives.

2 At a minimum, all field crew members should possess valid

training

Standard First Aid (Level 1), CPR and Workplace Hazardous Materials Information System (WHMIS) certification to ensure individual and crew safety. Additional required training could also include Transportation of Dangerous Goods (TDG), small boat safety (as required by the Coast Guard), swift water safety and awareness, ice safety and awareness, defensive driving, all-terrain vehicle safety, snowmobile safety, bear awareness, and wilderness first aid.

workers being informed

3 Provincial Workplace Hazardous Materials Information System (WHMIS) legislation requires that all workers be provided with information concerning the storage, handling and use of controlled products. This includes materials such as chemical preservatives. WHMIS requires that controlled products are labeled so that workers are alerted to the identity and dangers of products and to basic safety precautions. In addition, material safety data sheets (MSDS) are to be provided. These are technical bulletins that provide detailed hazard-precautionary and first aid treatment information for controlled substances, as well as the hazardous ingredients, physical data, fire and explosion hazard, reactivity data, health effects, preventative measures, first aid measures and preparation information. All sample collectors should obtain copies of current MSDS sheets for each preservative that they are expected to use and become familiar with the sheets.

danger from complacency

4 Individuals involved in sampling ambient waters should never become complacent about the potential dangers that exist in this occupation. Although we may think about such dangers as a thing of the past, there is a large volume of evidence that such tragedies continue to this day. There are too often injuries and deaths attributed to poor judgment even when samplers have been to a site numerous times before. At each site the field team should do a quick site safety assessment prior to carrying out any work (i.e. assess site location and access hazards, potential upstream, in-stream, and downstream hazards, safety gear required, etc.)

2.1 PROTOCOL FOR JOB SAFETY ANALYSIS AND RESPONSE FORMS

Overview

To ensure the safety of field staff, a job safety analysis (JSA) is a very important component of any work plan. The JSA identifies what work will take place, lists all of the potential hazards that could be encountered during the work, and details the measures necessary to avoid or mitigate the hazards. All staff undertaking sampling duties should be properly trained for the situations that they may encounter (driving trucks, handling boats, sampling on ice, cold weather survival training including hypothermia and heat stress, first-aid, etc.) and be supervised.

Sources

Environment Canada and B.C. WLAP (2005 (c)), Alberta Environment (2006), Environment Canada (2006 (b)), Environment Canada (2007)

At a glance

1 The JSA includes a list of the personal protection equipment required for each component of the field sampling such as driving to the worksite, ATV loading/unloading and access to remote sites, boat loading/unloading and operation, and specific sampling methods.

2 An additional component of the JSA is an emergency response plan (ERP), which contains all of the necessary information should an emergency situation arise. This includes contact numbers for all persons involved with the project, local emergency contact numbers (EMS, police, fire), hospital contact numbers and evacuation route(s), and any other information necessary for an emergency situation. Field operators are encouraged to report and rectify any safety issues that they encounter in the course of their normal duties. In the event of an injury, field operators must fill in the appropriate accident reporting form for their jurisdiction.

emergency response plan

3 A component of the ERP is a check-in time where the field crew will check in with a project manager on a daily basis to confirm their safety and the progress of the work. If this contact is not made, the project manager would initiate emergency measures.

daily check-in time

4 Daily meetings should be held to detail the work to be completed during the course of the day and allow the opportunity for all crew members to discuss any issues, concerns or improvements to the safety of the sampling program.

daily meetings

2.2 PROTOCOL FOR SAFETY IN SAMPLING FROM A BRIDGE

Overview

When sampling from a bridge, traffic may present serious problems either by being in close proximity to you as you sample or when your vehicle is parked either on the road shoulder or encroaching onto the roadway. For this reason you should try to adjust sampling times in order to avoid busy traffic. You should wear a reflective vest and use a pedestrian walkway if it is available. Some large trucks travel at great speeds over bridges, especially if the bridge is located at the bottom of a steep hill. The wind from these vehicles can make you lose your footing and also blow bottles and caps over the edge of the bridge. Dust stirred up by any vehicle can also contaminate water samples when they are uncapped.

Sources

Environment Canada and B.C. WLAP (2005 c), Environment Canada (1999 Draft), Environment Canada (2005 b)

At a glance

check visibility

1 Special care must be taken when sampling from bridges over navigable water, as boat operators and water skiers may not be able to see the sampler ropes. It may be necessary to flag equipment so that it is easily visible.

2 Power lines strung along or close to bridges should also be respected and avoided. At no time should the rope attached to a multi-sampler be draped over a power or telephone line.

3 Certain jurisdictions may require a permit if a person is working or parking on the side of a highway or street for more than 30 minutes. The need for a permit should not be a problem in most circumstances.

park with care

4 If you park on the highway shoulder, hazard lights (and roto-beacon if available) and traffic cones must be used to alert oncoming traffic of your presence (Photo 3). If your vehicle encroaches onto the road, two crew working signs, hazard lights, a circular light and three to six pylons should be used to alert oncoming traffic of your presence.

5 Whenever possible park your vehicle so as not to obstruct traffic. If you are encroaching into bridge traffic, a minimum of three traffic pylons must be used to mark out your work area on the bridge. Two crew working signs must also be used at either end of the bridge to signal to oncoming traffic that you are working on the bridge.

reflective vest

6 Samplers must wear a reflective safety vest to ensure being clearly visible to oncoming traffic.

7 Assess the bridge deck for slip/trip hazards and wear appropriate footwear. If sampling from a bridge with a wooden

be aware of footing

walkway, ensure that the boards have not begun to rot or that there are not missing planks or holes present. Ensure that the bridge railing is secure. Do not lean over the bridge railing.



Photo 3. Traffic control safety
(Source: Environment Canada and B.C. WLAP (2005))

2.3 PROTOCOL FOR SAFETY IN SAMPLING FROM BOATS AND AIRCRAFT

Overview

When sampling from aircraft, the pilot has final say regarding operational details such as loading of equipment, weather conditions under which the trip can be performed safely, safety information and deplaning procedures. A personal flotation device (PFD) should always be used. When sampling from a boat or aircraft, you should perform a visual inspection of the surroundings paying close attention to wave height and direction. Individuals should move within the boat using slow, calculating motions, thereby minimizing risk and should not stand in the boat to obtain the water sample. The boat must be maintained in a safe condition and aircraft safety and maintenance records should be inspected.

Sources

Alberta Environment (2006 a), Environment Canada (1999 Draft), Environment Canada (2001), EMAN-N (2005)

At a glance

boat and aircraft positioning

1 Prior to collecting a sample, it must be ensured that the anchor is secure and the boat is pointed into the wind. For aircraft, it must be ensured that the rotors and engines are still and the aircraft is pointed into the wind. Do not go forward from the red line on the float.

boat safety

2 When sampling from a boat, be aware of other boat traffic and natural hazards. All power-driven vessels must yield the right-of-way to those not operating under power such as canoes. Two paddles, a bailer and an anchor must be on board. All Transport Canada regulations regarding equipment required relative to the type/size of boat being used should be adhered to.

moving within the boat

3 Samplers should position themselves securely on the floor of the boat or on one of the seats. Move within the boat using slow, calculating motions, thereby minimizing risk to oneself as well as others in the boat. Do not stand in the boat to obtain the water sample. Position yourself securely on the floor of the boat or on one of the seats. Prior to collecting a sample, the other crew members in the boat should be informed that a sample is going to be collected and they should counter balance the boat by positioning themselves on the opposite side to which the sample will be collected.

link between pilot and sampler

4 The rear door of fixed-wing aircraft (e.g., the Cessna 206, with its long, broad tail section) should be tied open. Direct or headphone communication with the pilot is essential. The pilot may need to communicate the difficulty of keeping the aircraft stable on the water, or the fact that wind, wave or fog conditions are making it too dangerous to continue with the sampling. It is much safer to have a third person to help with communication

between the sampler and the pilot. Relatively busy "air traffic" in popular lake areas may mean additional safety risks, forcing workers to work quickly and efficiently.

footing on pontoons

5 Ensure that footing is secure on aircraft if sampling from pontoons. Pontoons become wet and possibly slippery when landing. Samplers on pontoons should be tethered to the aircraft and should be wearing a PFD as well as rubber boots. The PFD should not be worn in the aircraft unless it is the manual inflation type.

leaving a helicopter

6 For helicopters, never leave from the rear of the helicopter as the tail rotors are dangerous. If it is absolutely necessary to depart a helicopter with the engine running such as during winter sampling, leave the helicopter in a crouched position.

7 After the sample has been collected, the crew members should return to their regular positions in the boat or aircraft.

2.4 PROTOCOL FOR SAFETY IN SAMPLING FROM SHORE

Overview

Sampling from shore is one of the easiest methods for collecting samples, but it can also be dangerous. Always wear a PFD. Secure footing is essential and at swift water locations it is advisable to be tethered (to either a tree or a second person should policy so require) in case one slips into the current.

Sources

Environment Canada and B.C. WLAP (2005 c), EMAN-N (2005), Environment Canada (2005 a)

At a glance

1 When sampling from shore, a personal flotation device (PFD) must be worn.

2 You should ensure safe footing and be well balanced (the current may pull a multi-sampler unit sharply downstream). If rocky outcrops exist, ensure that these are not slippery when sampling.

safe footing

3 If safety is a concern at the site, samplers must attend a *Swift-water Safety and Awareness course* provided by Rescue Canada or other certified agency.

do not take risks

4 If you are not certain that river conditions are safe, you should not take a sample. Never take unnecessary risks.

Other sources

Environment Canada Undated (a), Newfoundland and Labrador Environment and Conservation (1999), Environment Canada (1999) draft, NB 2000, Saskatchewan (Undated), Environment Canada 2003 (g)

2.5 PROTOCOL FOR SAFETY IN SAMPLING BY WADING

Overview

Wading is one of the easiest methods for collecting samples, but it can also be one of the most dangerous. Rubber boots or hip-waders are standard equipment. If chest waders are worn a compression belt (or closely-fitted PFD) should be used. A wading rod or similar probing instrument is often useful to estimate the current and to locate holes and unsafe footing.

Sources

Environment Canada and B.C. WLAP (2005 c), EMAN-N (2005), Environment Canada (2005 a)

At a glance

1 When sampling by wading, a personal flotation device must be worn.

necessary training

2 If swift water safety issues have been identified at the site, then the sample collector must be tethered and the second crew member must have a throw-bag. The sampler must participate in a *Swift-water Safety A wareness training course* provided by Rescue Canada or other certified agency.

be aware of conditions before sampling

3 Explore the streambed for large obstacles or holes if you don't know the stream to be sampled or if the streambed changes at times. Wade carefully into the stream with a wading stick and safety line. Once you are certain that it is safe, sampling can begin.

4 Be aware of large ice pans that could knock you off balance or trap you. Also be aware of ice formation on rocks and other surfaces.

6 If the river is too high and/or swift for wading, then the samples should be collected from a nearby safe shore location.

7 If you are not certain that river conditions are safe, you should not take a sample. Never take unnecessary risks.

Other sources

Environment Canada (1999 Draft), New Brunswick 2000, Saskatchewan (Undated), Environment Canada 2003 (g)

2.6 PROTOCOL FOR SAFETY IN SAMPLING THROUGH ICE

Overview

When sampling on ice, always proceed with caution and do not jeopardize your safety. You should test the ice thickness with a rod or ice chisel every few steps. When on ice, you should always wear a personal flotation device and safety harness that is tethered to ice anchors or to something solid on shore. Ice thickness over moving water can vary, and the strength of the ice cannot be estimated from the apparent thickness near the shore (see Table 4). You should be aware that ice downstream from bridge supports and other structures may be thin as a result of modified flow patterns and de-icing agents. Honeycombed ice, areas over rapids, and confluences with other rivers and streams should be avoided as ice thickness in these areas will vary. Special care must be exercised during freeze-up and melt (rotting ice) conditions.

Sources

Environment Canada and B.C. WLAP (2005 c), EMAN-N (2005), Environment Canada (2003 a)

At a glance

1 Water quality samplers must have the required ice safety training and recommended equipment prior to collecting water samples through ice.

safety assessment

2 Ideally, Rescue Canada will perform an ice safety station assessment at all sites to be sampled. This may require that some sites sampled at certain times of the year be attended by at least two people.

3 For safety reasons, any work on ice and/or in cold weather should be carried out by at least two people.

4 Wear an approved flotation or survival suit when working on ice over deep or swift water.

use extreme caution

5 Always proceed with caution over ice, and be attached to a tether. Use an ice bar to test the thickness and condition of the ice to make sure that it is safe to work on it. River ice can be thin even in the Arctic if there is a current or warm groundwater inflow (see Table 4). Carry ice safety picks to help in pulling yourself back onto the ice if you fall through.

6 Carry an extra change of dry clothing with you.

7 Never drive a vehicle over the ice except where a winter ice road exists and then do so with caution.

8 If the ice is unsafe, do not take a sample.

Other sources

Newfoundland and Labrador Environment and Conservation (1999), Environment Canada (1999) draft, Saskatchewan (Undated)

Load	Required Ice Thickness (mm)[1]			
	Continuous Travel		Stationary Load	
	Lake	River	Lake	River
1 person on foot	50	60	75	90
Group, single file	80	90	120	135
Passenger car (2000 kg)	180	210	300	350
Light truck (2500 kg)	200	230	340	390
Medium truck (3500 kg)	260	300	425	500

[1] Effective thickness = Thickness (clear ice) + ½ Thickness (white ice)

Where water lies between layers, use only the depth of the top layer of ice. Under thawing temperatures above average air temperature exceeds zero degrees Celsius, increase the required thickness by 20%.

Source: EMAN-N (2005) from the Alberta Occupational Health and Safety Council 1990.

Table 4: General guidelines for ice strength (clear blue ice)

2.7 GENERAL PROTOCOLS FOR SAFETY IN FIELD PRESERVATION OF SAMPLES

Overview

Physical, chemical and biochemical reactions may take place in the sample container between the time of sample collection and laboratory analysis. Storing samples in a cool dark shipping container, such as a cooler, assists in minimizing or slowing down the changes. In some cases, the samples require a preservative before shipping to maintain the integrity of the sample. Strong acids or bases used for the preservation of water samples should be stored and handled with care. Always store preservatives in an upright position before use. Store in a location where the preservatives will not freeze or overheat.

Sources

Environment Canada and B.C. WLAP (2005 c), EMAN-N (2005), Environment Canada (2006 b)

At a glance

Material Safety Data sheets

1 Care must be taken in the handling of preservatives. Experience has shown that minor drops of specific preservatives, such as acids, on clothing or permeable surfaces can create holes. It is possible that mishandling larger quantities of these substances can cause damage to skin and other parts of the body. During use and disposal, preservatives must be handled carefully. Unused or contaminated preservatives must be disposed of using the outlined procedures that the manufacture provided for each different preservative. Samplers should read the MSDS for each preservative to be used. When in doubt, you should contact the supplier.

gloves and safety glasses

2 Gloves and safety glasses must be worn when preservatives are being used. If you already wear eyeglasses, then safety glasses are not necessary. For certain preservatives, a respirator mask may be necessary.

3 An example of the proper handling of preservatives is shown in Photo 4. The sampler wears latex gloves to protect exposed skin areas. Preservatives are stored and dispensed in individual portions. The vials of preservative are handled with great care and disposed of after use into a sealed plastic bag in the field, which is later disposed of according to supplier recommendations.

dangers of sodium hydroxide

4 Avoid the inhalation of preservative vapours or direct contact with the skin, eyes and clothing. Sodium hydroxide used for cyanide preservation is dangerous if it comes into contact with your skin or eyes. Sodium hydroxide has a soapy feel when rubbed between the fingers. If this sensation is noticed, immediately rinse your hands with plenty of water. Like other preservatives, it will cause damage to skin and clothing.

5 Preservative spills should be tended to immediately by

dilution with a large amount of water followed by mopping up.

6 If a preservative does come into contact with your skin, the affected area should **immediately** be flushed with large amounts of water. The area may have to be flushed for as long as fifteen minutes.

seek professional treatment for eye injuries after first aid

7 If a preservative gets into your eyes, flush them and the outside of the eyes immediately with plenty of water. It may be necessary to hold the eyelids open during the washing procedure. Continue the rinsing for at least 15 minutes. After first aid, all eye injuries must be professionally treated as soon as possible.

Other sources

International Standards Organization 2008 (c) Draft, Environment Canada Undated (a), Environment Canada (2008 draft), Saskatchewan (Undated), Environment Canada (2009), Environment Canada (2006 b)



Photo 4. Handling and preserving of samples using safety gloves (Source: Environment Canada and B.C. WLAP (2005))

3.0 PROTOCOL FOR CLEANING SAMPLING EQUIPMENT

Overview

The effective cleaning of sampling equipment prevents, minimizes and limits the cross-contamination of samples taken during a sampling trip or between sampling trips. This is particularly important when trace parameters such as trace metals, or trace organic constituents are being sampled. Cleaning is also used to remove manufacturing residues from new equipment and to remove dust and any other foreign substances from equipment that has been in long-term storage.

Cleaning of sampling equipment also helps to prevent the transfer of aquatic invasive species from one water body to another. Aquatic invasive species are organisms that have been introduced into a new aquatic ecosystem and produce harmful impacts on native species biodiversity as well as the human use of these ecosystems such as recreational development and fisheries. Aquatic invasive species can be in the form of fish, invertebrates, reptiles, amphibians, algae, and plant species. Many aquatic invasive species can be unknowingly transferred in residual water found in sampling equipment, or on aquatic plants, watercraft, equipment and related sampling gear such as nets and wadders. Simple precautions can prevent the spread of aquatic invasive species from one water body to another.

Clean and inspect all equipment, nets, personal gear such as waders, watercraft, and trailer. **Remove** all plants, animals and mud. **Rinse** using high pressure. Extremely hot tap water is preferable - 50°C (120°F).

Drain all water from sampling equipment and watercraft including the motor, livewell, bilge at the source or on land.

Dry watercraft for at least 5 days in the hot sun (if rinsing is not available). Alternatively, freeze all equipment and gear for two or more days, or soak all equipment including nets in a 1) table salt water solution (230 g (2/3 cup) of salt to 1 L (1 gallon) water) for 24 hours or 2) undiluted white vinegar for 20 minutes, or 3) diluted household bleach (> 5% sodium hyporchlorite at a concentration of 100 ml (~3 ounces) of bleach to 20 L (~5 gallons) of water for at least 60 minutes.

Dispose of unwanted live fish at source. Never transport and release plants, animals, mud or water into another water body.

Sampling equipment should be either disposable (single use only) or subjected to rigorous cleaning procedures (depending on the parameters being sampled) and stored in sealed new

plastic bags (e.g., Ziploc) or wrapped in new aluminum foil, depending on what parameters are sampled. Parafilm (self-sealing, moldable and flexible film) can also be used to cover equipment openings to prevent dust accumulation. It may be necessary to replace the sampler and/or rope on occasion if these become excessively dirty or worn.

All sampling bottles should be obtained from the appropriate analytical laboratory, only single use, remain capped before and after actual sampling and used for one specific sampling procedure. The following cleaning procedures are for all non-disposable sampling equipment excluding sample bottles.

Sources

Alberta Environment (2005 a), Environment Canada and B.C. WLAP (2005 c), Environment Canada (2006 b)

Special safety concerns

Always add acid to water. Use a fume hood if one is available. If not, wear respirators with the appropriate filters for the hazardous chemicals in use (e.g., acids, solvents). Clean equipment in a well-ventilated area, and wear safety glasses and gloves. Consult the MSDS for all chemicals used in the cleaning procedures for information regarding personnel protection, spill cleanup, and medical treatment directions.

At a glance

General considerations

1 A 5% (v/v) solution of hydrochloric acid or a 10% (v/v) solution of nitric acid should be used to soak/rinse equipment that is to be used to collect samples for trace metals analyses. Note: if the equipment is to be used to collect samples for nitrogen analyses then nitric acid should not be used.

cleaning solutions

2 A non-phosphate, laboratory-grade detergent (e.g. Liquinox, Contrad, Extran) should be used to soap-wash equipment. Use a 0.1-2.0 % v/v solution when cleaning between field trips (higher if required) and use a 0.1-0.2 % v/v solution for field cleaning. To limit soap residue accumulation, do not use >0.2 % v/v solution for field-cleaning

3 Note: all containers or equipment for trace organic work must be stainless steel, glass or Teflon.

rinsate blanks

4 Equipment or rinsate blanks can be collected to test whether there is any residual contamination left on the equipment after cleaning. A rinsate blank is a sample of de-ionized water collected after it has been poured over/through the sampling equipment in question. The water used should be of the highest grade to accurately analyze the rinsate blank samples.

5 If methanol is used as a solvent then do not use it on equipment destined to collect samples for total particulate carbon (TPC), particulate organic carbon (POC), and total or

dissolved organic carbon (TOC/DOC).

Cleaning equipment for trace inorganic analysis

1 Perform physical removal with brushes and non-phosphate detergent wash. This removes all visible particulate matter and residual oils and grease.

2 Tap water rinse and distilled/de-ionized water rinse. This removes detergent residues.

3 Acid rinse or soak non-metallic sampling equipment. Use either a 5% (v/v) solution of hydrochloric acid or a 10% (v/v) solution of nitric acid. Typically the equipment is subject to either an acid rinse or soak between field trips and an acid rinse when cleaning/decontaminating equipment from the field.

4 *Acid Rinse* : Equipment should be rinsed thoroughly with acid, ensuring that the acid makes contact with all surfaces likely to be in contact with the sample. Ideally this procedure should be conducted in a fume hood

5 *Acid Soak:* Ideally equipment should be soaked for 12-24 hours, but USGS (2005) recommends a 30-minute acid soak. Ideally this procedure should be conducted in a fume hood.

6 Complete multiple distilled/de-ionized water rinses (3-5 rinses). At a minimum the last rinse should be with de-ionized water. To remove all acid residues ensure that the water makes contact with all surfaces likely to be in contact with the sample.

7 Air-dry in a clean area and on a clean non-metal surface. Avoid areas with dust and fumes.

8 Store in new, clean Ziploc-type plastic bags, and/or cover equipment openings with new Parafilm. Mark the date of cleaning and the initials of the cleaning personnel on the bag. Transport the freshly cleaned equipment in a clean vessel and store in a clean environment.

proper disposal

9 Discard the waste (leftover) acid into a clearly marked waste container and store in hazardous waste area for proper disposal. Consult the MSDS for details and do not store acids close to solvents.

Cleaning equipment for trace organic (e.g. hydrocarbon) analysis

1 Perform the physical removal of trace materials with brushes and non-phosphate detergent wash. This removes all visible particulate matter and residual oils and grease. Ideally this process should be conducted in a fume hood.

2 Tap water rinse and distilled/de-ionized water rinse removes detergent residues. Rinse with organic solvents (e.g., acetone, hexane, or methanol). A common procedure is to rinse first with hexane, allow to air dry, rinse again with acetone and then allow the equipment to air-dry again. Equipment should be rinsed

thoroughly with the solvent, ensuring that the solvent makes contact with all surfaces likely to be in contact with the sample. Ideally this process should be conducted in a fume hood.

3 Complete multiple distilled/de-ionized water rinses (3-5 rinses). At a minimum the last rinse should be with de-ionized water. To remove all solvent residues ensure that the water makes contact with all surfaces likely to be in contact with the sample.

4 Air-dry in a clean area and on a sanitized surface covered with new (rinsed in hexane/acetone) aluminum foil. Avoid areas with dust and fumes.

5 Cover the equipment with new, clean aluminum foil and store in new Ziploc-type plastic bags. Mark the date of cleaning and the initials of the cleaning personnel on the bag. Transport the freshly cleaned equipment in a clean vessel and store in a clean environment.

proper disposal

6 Discard waste hexane/acetone into a clearly marked container for organic solvents and store in hazardous waste area for proper disposal. Consult the MSDS for details. Do not store acids close to solvents.

Cleaning equipment for specific pieces of equipment: euphotic sampling tube/peristaltic pump tube

1 After use, rinse with de-ionized/distilled or tap water inside and out.

2 Remove foot valve from euphotic tube and soak in 5% HCl.

3 Fill tubing with 5% HCl and let stand for 6-12 hours.

4 Thoroughly rinse the inside of the tubing with de-ionized/distilled water (3-5 times) water. At a minimum the last rinse should be de-ionized water.

5 Re-assemble tubing and store in a clean plastic Ziploc-type bag labeled with date of cleaning and the initials of the cleaning personnel on the bag. Transport the freshly cleaned equipment in a clean vessel and store in a clean environment.

6 Do not soak the lead weight or the hose clamps in acid.

7 All tubing should be replaced annually. All weights should be rubber coated and any exposed areas should be repaired.

Cleaning procedures for stainless steel – general water sampling

1 Wash with a low residue, non-phosphate detergent (e.g. Contrad, Neutrad or Extran).

2 Rinse thoroughly with de-ionized/RO water.

3 Store in new, clean Ziploc -type plastic bags, and/or cover equipment openings with new Parafilm. Mark the date of cleaning and the initials of the cleaning personnel on the bag. Transport the freshly cleaned equipment in a clean vessel and store in a clean environment.

4.0 GENERAL PROTOCOLS FOR FIELD NOTES

Overview

Good sampling practice involves the use of detailed field notes. Specific information about seemingly unimportant facts, such as the time of day or weather conditions, is often significant when interpreting data. A field logbook (3-ring binder with water proof paper) for each project is mandatory. All field measurements should be entered directly into this logbook while in the field. All information recorded in the logbook should be entered into a database immediately upon return from the field.

In addition to documenting standard conditions and measurements, field staff are responsible for noting any unusual occurrences. Any deviations from standard protocols (e.g., samples taken from a different location due to safety or access considerations or procedures used that differ from those outlined here) must be recorded in the database. Upon observing an anomalous condition, such as an unusual colour or odour, excessive algal growth, indications that foreign substances have entered the system (oil slicks, surface films, etc.), or fish kills, the field investigator should take samples in addition to those required by the project design.

Field notes that are taken during sampling are often critical in the interpretation of the data, in some cases even several months or years after the sampling event has taken place. Another advantage of keeping good field notes is that notes can be reviewed prior to completing additional sampling. This can be helpful if sample collection points change throughout the year. By noting historical records, it is possible to collect more representative samples, thereby ensuring the integrity of the sample. Historical records provide insight into the preparation of a sampling trip and the possible hazards or conditions that a site may contain.

Sources

British Columbia MWLAP (2003), Environment Canada and B.C. WLAP (2005 c), Alberta Environment (2006 a), EMAN (2005)

At a glance

information to be recorded

1 Record standard information for the site, including site name and number, date and time of day, sample collector's names, GPS or other coordinates, etc.

2 It is critical that the following parameters be recorded at each site as soon as the measurement has been taken:

- field measurements of air and water temperatures,
- pH,
- water clarity,

- dissolved oxygen and specific conductivity (or other).

Field instruments are available to measure the parameters (listed above) individually and as multi-meters. Specific field instruments coincide with devices that can record and log data in situ.

preserving information and notes

3 Unusual conditions that may interfere with the collection of a representative sample should be documented.

4 Preferably, this information will be recorded on water-proof paper, handheld device or laptop and filed in a specific area for each site.

5 Samplers must avoid taking all field notes for a site with them during each sampling event; since this potentially can lead to the loss of a significant amount of information should an accident occur.

6 Laboratory submission sheets need to be completed by the sampler identifying the date and location of the sample and any field measurements.

Other sources

ISO 2008 (b), Alberta Environment (2006 a), Environment Canada Undated (a)

4.1 GENERAL PROTOCOLS FOR CHAIN OF CUSTODY

Overview

Samples need to be collected using specific techniques and appropriately labeled for accurate identification by the laboratory. It is important to ensure appropriate documentation accompanies the sample, and samples reach the laboratory in a timely manner. Samples that are time sensitive must arrive within enough time to ensure analyses can commence immediately upon arrival without affecting the integrity of the sample. This may require the samples be collected early in the week to coincide with travel time or ensure that arrangements are made with the laboratory to accept the samples and start analyses immediately.

A chain of custody/sample submission form is applicable for all projects but the form is crucial if the project is being carried out for legal reasons (e.g., compliance monitoring). This form is critical to the validity or soundness of the project and guarantees that the sample has not been tampered with. It also ensures that only authorized personnel handle samples and that proper field sampling techniques for the program are used. All transfers of samples are noted on the form. Transfer procedures are also described to make sure samples are properly protected and preserved. Any changes in sampling or sample storage should be noted on the chain of custody form. The information recorded on the form should be kept on file for the project.

Sources

Ontario Ministry of the Environment (2006), EMAN-N (2005)

At a glance

timing issues

1 Preferably, samples are collected early in the week or on a weekend so that the samples can arrive at the laboratory when it is open and samples do not have to sit unattended. This is especially important when time-sensitive (e.g., bacteriological samples) or legal analyses are being requested.

proper labeling

2 Bottle and other sample container labels should be marked with permanent waterproof markers, water-proof pencils or with peel and stick labels. Every bottle must be labeled with the field sample number, sample name, site number, date of sample, time, analyses requested for sample (e.g., Metals) and preservatives/filtration used.

3 Information should be recorded on the sample submission form using a pen or a water-proof pencil, since felt markers or common lead pencils can smudge and rub off. Write as neatly and legibly as possible.

4 Keep submission forms dry by storing in a Ziploc-type plastic bag and either placing on the top of the cooler/container with the samples and ice/ice packs or in a pouch located on the inside of the top of the lid.

information needed on forms

5 Forms should contain the following information (important for the laboratory receiving the samples): client and program information; station location description; sample matrix and type; laboratory analyses (according to appropriate detection limits) requested; field sample identification number; submission date and time of collection (preferably 24-hour clock); sampler name and contact phone number; water and air temperature on sampling; and comments on any unusual conditions.

legal sampling

6 For legal sample collection, individual samples need to be sealed and initialed prior to packing in the storage cooler. After preservation has been finished, the storage cooler itself should be sealed and initialed. The cooler must remain in the custody of the sampler with appropriate legal forms until it is turned over to the next person in the submission chain and signed-off by the sampler. Actual procedures for legal sampling should be followed by samplers who have completed a recognized legal sampling procedure course.

7 Rapid transportation of the samples to the laboratory is recommended, especially in the case of legal samples.

4.2 PROTOCOL FOR STORAGE AND SHIPMENT OF SAMPLES

Overview

Field samples should be stored at 4°C in a mobile laboratory refrigerator, portable refrigerator, or a cooler containing ice packs in the summer months. In below freezing temperatures, place the samples in a cooler containing collapsible warm water jugs. Store the sample as necessary, until they can be transferred to a temporary holding refrigerator or refrigeration facility. This will make sure that they are preserved properly and that there is no loss of sample quality. If refrigeration is not available, field activities and transportation of samples must be planned so that samples are sent immediately to the laboratory.

Sources

EMAN-N (2005), Environment Canada (1999 Draft)

At a glance

ship samples asap

1 Samples should be shipped as soon as possible after collection. Ship samples in coolers containing enough ice packs or collapsible water jugs with warm water, to keep the samples at approximately 4ºC for the length of the trip. Whenever possible, send samples to the laboratory the same day they were collected.

2 Each shipping container should contain only bottles that are to be analyzed or cleaned by the receiving laboratory. All samples must be well sealed and packed using foam chips or bubble wrap to prevent spillage or breakage. The laboratory will re-wash all empty bottles. Any dirty bottles that are returned should have their lids on. Rinse old reagent bottles well before returning them.

protect forms to be included with samples

3 Be sure to include a copy of the sample field sheet and/or submission form with each shipment. A chain of custody form for the samples, if required, must also be contained in each shipping container. These forms should be placed inside a sealed plastic bag in the shipping container to protect them in case of leakage or breakage of samples.

proper labeling of shipping containers

4 Label all shipping containers with the address of the destination and the sender. The address labels should be taped over with clear tape to protect against scuffing or marking. Label the top of all shipping containers with “OVER 16 KG”, “THIS END UP” or “FRAGILE”, as applicable. “DO NOT FREEZE” labels are also useful. Make sure containers are free of misleading address and warning labels. Multiple containers should be numbered in a series out of a total number (for example “3 of 6”).

5 If a cooler is being used to ship the samples, make sure the spigot is taped over to prevent leakage. At least one piece of tape should be used over the closure clasp. Coolers should also have secure handles. Any broken handles or sharp projections should be removed.

6 Proper documentation or handling receipts from the transportation/shipping company should be kept on file so that lost or damaged shipments can be traced.

be aware and follow all Transport of Dangerous Goods regulations

7 It is very important to follow all *Transport of Dangerous Goods* regulations for packaging, labeling, and documenting sample boxes. Normally, preserved samples are not considered to be dangerous goods because of the much diluted amount of preservative. However, the shipper is responsible for the goods. Consider becoming a certified shipper of dangerous goods in order to protect yourself and personnel who may be transporting the samples as well as those receiving them. If you have doubts about any aspect of the regulations, contact your area Transport of Dangerous Goods Trainer or Transport Canada.

Other sources

BC WLAP (2003), ISO (2008 a) , Environment Canada Undated (a), Environment Canada (2008 draft), Ontario Ministry of the Environment (2006), Newfoundland and Labrador Environment and Conservation (1999), NB 2000, Saskatchewan (Undated), Environment Canada (2009), Nova Scotia Department of Environment and Labour 1996, Environment Canada (2003 a)

5.0 GENERAL PROTOCOL FOR FIELD FILTRATION

Overview

To find the concentration of dissolved constituents, water samples must be filtered through a 0.45 µm cellulose acetate membrane filter. This can be done in some cases by the laboratory but often involves filtering samples in the field (or field laboratory). All parts of the filtration system must be washed including the tubing, filter flasks and funnels unless you are using disposable filter units. These disposable units will reduce sample contamination. Otherwise all filtration equipment must be washed before leaving for the field and between filtration of each sample. The filtration equipment must be washed between replicate samples as well.

Sources

Alberta Environment (2006 a), EMAN-N (2005), BC WLAP (2003)

At a glance

1 Filter units and related apparatus (see Figure 1) must be kept clean, using routine procedures such as acid washes and soakings in de-ionized water. Cleaned filter units should be stored in labeled, sealed plastic bags to prevent contamination.

2 **General filtration:** Immediately before field trips, clean the inside of all tubing by filling it with 5% HCl and allowing it to soak for six hours or more. Then pump approximately 500 mL of de-ionized water through the tubing. Wash filter flasks and funnels with a non-phosphate laboratory detergent (e.g., Liqui-Nox). Rinse these three times with tap water, followed by de-ionized water four times. Then soak the filter flasks and funnels in a 5% HCl bath overnight. After soaking, rinse four times with tap water followed by de-ionized water four times.

3 Before each filtration, pump approximately 250 mL of de-ionized water through all tubing. Rinse filter flasks and funnels with de-ionized water three times.

wash filtration equipment between replicates

4 After filtering highly turbid samples, pump about 500 mL of 5% HCl through the tubing, followed by about 200 mL of de-ionized water. Scrub and wash the filter flasks and funnels with 5% HCl. Rinse often and well with de-ionized water. If no sediment appears to be sticking to the filter unit, this HCl wash may be left out. The filtration equipment must be washed as outlined between sample replicates as well.

Other sources

ISO (2008 a), Environment Canada Undated (a), Environment Canada (2008 draft), Environment Canada (2006 b), Environment Canada (1999), Environment Canada (2009)

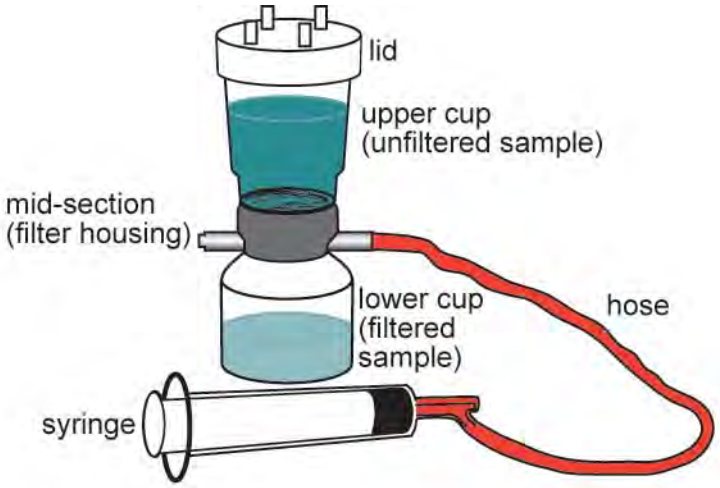


Figure 1. Example of filtration apparatus (Source: BC WLAP (2003))

5.1 PROTOCOL FOR FILTERING PHOSPHORUS AND NUTRIENT SAMPLES

Sources

Environment Canada (2006 b), Environment Canada Undated Wolfe Island Field Site Sampling Protocol (Draft)

At a glance

1 Rinse glassware with Milli-Q water. Use fully open glass filtration cup**.** Wearing disposable gloves and using tweezers, place cellulose filter on filtration holder. Place filtration cup on holder and clamp securely.

2 Clean glassware, using glass 500 mL graduated cylinder, filter aliquot (250 mL) of raw sample water. Rinse this filtrate around the Erlenmeyer flask and pour out. Repeat using the same filter paper.

3 Change filter paper and filter another aliquot (750 mL) of raw sample water. Using the filtrate, rinse the sample and duplicate bottles, and lids, twice, then fill bottles with sample water.

4 Using the filtrate, rinse the 125 mL glass sample bottles and lids twice, then fill with sample water. Add 1 mL of 30% sulphuric acid preservative to each phosphorus bottle and mix well by inverting. Store the samples in a refrigerator

5 Remove filter paper from the filtration unit, and rinse the filtration unit with 200 mL Millipore water. Pour water out in a sink; allow water to drain from Erlenmeyer flask.

keep out of direct sunlight

6 For **chlorophyll-a** samples, ensure that the sample bucket and filtering apparatus are kept out of direct sunlight. Rinse the filter funnel and graduated cylinder between samples with de-ionized water. Always use forceps marked for chlorophyll-a filtering when handling filters.

always wear gloves

7 For **particulate nitrogen and carbon**, rinse filtration glassware with Milli-Q water methanol then sample water. Wearing gloves and using tweezers, (do not touch with fingers), place a Whatman GF/C filter on the filtration holder. Place the square slotted filtration cup on the filter and clamp securely.

8 Using the glass 500 mL graduated cylinder, filter an aliquot (total 1000 mL), of well mixed whole water. The vacuum is set at 5-7 psi, the depth of sample water in the cup 2-4 cm. Ensure there is no leakage at the edge of the filter paper. The final sample should be contained only in the small rectangular opening of the filtration cup.

9 After the water sample has passed through the filter, rinse the inside of the filtration cup with 2-5 mL of Milli-Q water. Maintain the vacuum at 5-7 psi. Carefully add 2-5 mL of 0.1 N H_2SO_4 to the filter and continue to filter, (sulphuric acid removes carbonates). Rinse again with 2-5 mL of Milli-Q water.

10 With vacuum on, remove filtration cup. Continue vacuum

filtering to remove any excess water from the GF/C filter. When filter paper is drained, turn off vacuum and transfer filter paper carefully to a labeled Petri dish (label with date, site, volume, parameter and duplicate code if required). Wrap Petri dish in foil and place in a vacuum dessicator (20 psi) for 2-3 days. When the filter paper is dry, place the Petri dish in an air-tight container in a refrigerator.

5.2 PROTOCOL FOR CONVENTIONAL FIELD MEASUREMENTS

Overview

In situ measurements of parameters such as pH, dissolved oxygen, temperature, conductivity, turbidity, and redox potential are routinely taken at the time of sampling. These measurements are taken *in situ* in the water body just below the surface, at mid-depth or at discrete depths depending on the sampling objective and the depth of the sampling site, using electronic single or multi-probe meters.

The proper maintenance and calibration of instruments is a very important part of any water quality program. The instruments must be in good working condition in order to get accurate results. Field personnel must understand the calibration and use of any instrument they are using in the field. Maintenance and calibration log books should be kept up to date to track the performance of the meter. The meter probes should be calibrated daily under field conditions and temperatures, and periodically throughout the day if required (e.g., dissolved oxygen at sites of different altitudes or every five samples if water quality changes dramatically from site to site). The exceptions are: temperature (check in laboratory monthly with a certified mercury thermometer), conductivity and turbidity (calibrate at the beginning of the sampling trip), and redox potential (calibrate once every six months).

Review the water quality data on-site during sample collection to prevent the measurement and/or recording of false measurements. Re-measure and double check any dubious readings before leaving the site. It may also be worthwhile doing verifications at the end of the day for some key parameters (not re-calibrations) to check if the meter has drifted or is malfunctioning. Meter readings should be checked in standard solutions and recorded in the log/field book. This ensures that the meter has been working properly throughout the day.

Sources

Environment Canada and B.C. WLAP (2005 c), Alberta Environment (2006 a), EMAN-N (2005)

At a glance

1 If taking field temperature measurements with a thermometer, remove the cover and place it in the shade, out of the wind, preferably about 1 metre above the ground to minimize the heat influence from anything other than ambient air temperature. Leave the thermometer for five to ten minutes or for the time it takes to collect the water samples. Record the air temperature to the nearest 0.5 degrees Celsius. Temperature measurements of the water must be taken in the field

immediately upon obtaining a sample or preferably *in-situ,* by means of automated temperature probes.

calibration

2 Calibrate the multi-probe/meter prior to daily sampling for pH and DO. Conductivity and turbidity can be calibrated at the beginning of the sampling trip and redox potential should be calibrated every six months. Temperature should be calibrated every month with a certified thermometer.

3 *In situ* measurements at sites <2m deep should be taken just below the surface of the water (0.1 m depth).

4 *In situ* measurements at sites >4m deep, should be taken just below the surface of the water (0.1 m depth) and at 1 m intervals down to 1 m above the lake bottom. At sites ≤ 2 m deep, one set of measurements at mid-depth might be considered appropriate. At sites between 2 and 4 m deep, two measurements can be taken 0.25 m below the surface and 0.25 m above the lake bottom. It is preferred to take field water quality readings from the body of water itself (*in situ*) but on some occasions it may be necessary to take the measurements from a sub-sample of water. In this case take separate water samples for these field measurements and never take field water quality measurements from samples to be submitted to the laboratory for analysis.

let the instrument stabilize at each depth

5 Let the instrument stabilize at each depth (usually 1-2 minutes) and record the readings in a field sheet/book. Also, if possible store readings at each depth in a datalogger. On deep profiles and where approved by the project manager, it may be acceptable to proceed at 5 m intervals if there is little change in readings at 1 m intervals. When change is detected (thermocline, chemocline, etc.), then define the area of change at 1 m intervals.

6 Bring the probe/sonde back up to 1 m, allow to stabilize and record readings at that depth. (Note: redox will probably not stabilize quickly at the surface.) This acts as a field check on the instrument and verifies the accuracy of the first reading.

7 New **conductivity** meters may use different types of probes. Follow the manufacturer's instructions for use. Conductivity meters are also available for "pure water" (i.e., conductivity from 0 – 100 µS/cm) and for high conductivity waters (100 – 1000 µS/cm). The sampling circumstances may need both ranges.

8 **pH** should be measured after the conductivity measurement using a pH meter. Adjust the temperature reading (if needed) to the temperature of the field sample. Shake the sample and rinse the electrode with sample. Place the electrode in the sample. Select pH measurement mode. Swirl the sample and measure the pH. Allow sufficient time for the meter to stabilize. Be sure to rinse the electrode with de-ionized water before storage. Store the electrode in a potassium chloride (KCl) storage (long-term) solution according to the manufacturer's instructions. pH electrode sensors should be kept wet with sample water or tap

water, and not in a standard solution, at all times during sampling.

9 **Dissolved oxygen** can be measured using multi-meter DO sensors that have appropriate membranes and are properly calibrated. The meters measure the level of dissolved oxygen in both milligrams per litre and percent of oxygen saturation. Follow the manufacturer's instructions for measuring DO, calibrating the meter and keeping the probe clean. One water sample taken at one profile depth per water body can be subjected to a Winkler analysis as a further check of the accuracy of the DO meter measurement, preferably at a depth where oxygen appears stable. A meter DO measurement within ±0.5 mg/L of the Winkler DO measurement is generally considered acceptable, however USGS (2005) recommended that meter and Winkler DO measurements should be within ± 0.05 mg/L DO.

10 **Turbidity** is measured as follows**.** Fill a ***cuvette*** with shaken field sample to the line marked on the cuvette. Dry the cuvette with a clean, lint-free, laboratory-grade paper towel. Place the cuvette with the orientation mark facing forward in the chamber. Note: Handle the cuvette with care and do not touch the area of the cuvette below the line. Keep the cuvettes absolutely clean. Measure the turbidity of the sample. Rinse the cuvette with de-ionized water before storage.

Other sources

ISO (2008 a) , B.C. WLAP2003, ISO 2003 (a), Ministère de l'Environnement, Gouvernement du Québec (2000), Environment Canada Undated (a), Environment Canada (2008 draft), Ontario Ministry of the Environment (2006), Newfoundland and Labrador Environment and Conservation (1999), Prince Edward Island Undated, Environment Canada (1999) draft, New Brunswick 2000, Saskatchewan (Undated), Environment Canada (2009), Nova Scotia Environment and Labour 1996, Environment Canada (2003 a), Environment Canada 2003 (f), Environment Canada 1998, Environment Canada 2003(e)

6.0 PROTOCOL FOR GENERAL SAMPLING METHODS

Overview

Water samples can be taken by wading into the water, from a boat during open water seasons, or through the ice. Samples can also be taken from docks, bridges and the floats of an airplane. Some water samples can be analyzed in the field at the time they are collected, while other samples are collected for later analysis in a laboratory. When possible take samples from the same location, regardless of whether it is open water or ice covered. The use of a global positioning system (GPS) to identify geographic co-ordinates will ensure that the sampling site is precisely located. If applicable, document the change from the original sampling location, and the particular reason for the location change.

Samples near the surface can be taken by holding the collection bottle and lowering it into the water until covered. This hand-held method of sampling, commonly called 'grab sampling', is the simplest way of collecting a water sample. The sample bottle should be held as show in Figure 2.

It is beneficial to be prepared before heading out to sample with all necessary equipment; this may include meters for field measurements and field log books, QA/QC sample bottles, and field bottles. Samples can be collected in the most efficient and safe manner if a methodical approach is taken. This may involve tethering the sampler to a second individual or ensuring applicable testing is completed before entering an enclosed space to collect samples. Ensure that safety comes first before beginning the sampling process.

Sources

Environment Canada and B.C. WLAP (2005 c), Alberta Environment (2006 a), EMAN-N (2005)

At a glance

1 When sampling streams, unless otherwise specified, aim for the mid-stream. When specified samples may need to be collected near one or both shores. The sample location will be determined in the study design component. A reconnaissance of the site will determine the coordinates (via GPS unit), or specific landmarks that identify the sample site.

order of grab samples

2 When collecting grab samples, there is a particular order that should be followed during collection. First grabs samples taken should be any blanks that are needed at the site. These are followed by **"**clean**"** samples such as those used to measure bacteriology (including any such replicates). Then samples from which field measurements are measured (if these are not being calculated in the source water itself). Finally, any remaining samples, which would include any related replicates.

carry samples in cooler with ice packs

3 Ideally, sample bottles should be carried to and from the sampling vehicle in a cooler that has ice packs. Sample bottles should be packed in the cooler and field notes added to the laboratory requisition sheet. Once sampling has been completed on site, meters should be returned to their carrying cases, additional sampling and safety gear collected and stored in the vehicle for transit to the next site.

4 A sampler's responsibility is to:

- collect samples as directed in the study design,
- note unusual conditions at a site where he/she repeatedly sample,
- minimize field error to the greatest amount possible, and
- ensure that the best possible sample is collected to produce the most representative results.

5 Tightly cap all the bottles and place them upright in the shipping container for transport. Return the bottle for trace metals to the Ziploc-type bag. Be sure that any glass bottles are not in contact with each other by placing plastic bottles between them.

6 Place the ice pack(s) in the sampling kit immediately. Bottles that are most temperature-sensitive should be arranged at the bottom of the shipping container as close as possible to the ice pack(s). During the warmer summer months, shipping coolers must be kept out of the sun and away from any other heat sources. Loose or bagged ice should never be used in the shipping containers because of the possibility of contamination. As a general guideline, the volume of sealed ice should be equivalent to the volume of sample water included in each cooler sent to the laboratory. Ice packs must be included in every kit because of short-term storage of the shipped coolers in heated buildings, courier trucks, etc. If necessary, use additional ice packs during the summer months. . In the winter months with below freezing temperatures, collapsible jugs of warm water should be packed in the cooler to prevent freezing of the samples. Extra caution should be taken packing individual samples in bubble wrap in extreme cold conditions since glassware and plastic sampling bottles may shatter in transit. Samples must arrive at the laboratory as close as possible to the ideal temperature of 4˚C, and within the 48-hour time limit.

samples must arrive at the laboratory as close as possible to the 4°C ideal temperature

Other sources

BC WLAP (2003), ISO 2003 (a), ISO (2008 a), Environment Canada (2008 draft), Ontario Ministry of the Environment (2006), Newfoundland and Labrador Environment and Conservation (1999), NB 2000, Saskatchewan (Undated), Environment Canada (2009), Nova Scotia Department of Environment and Labour 1996

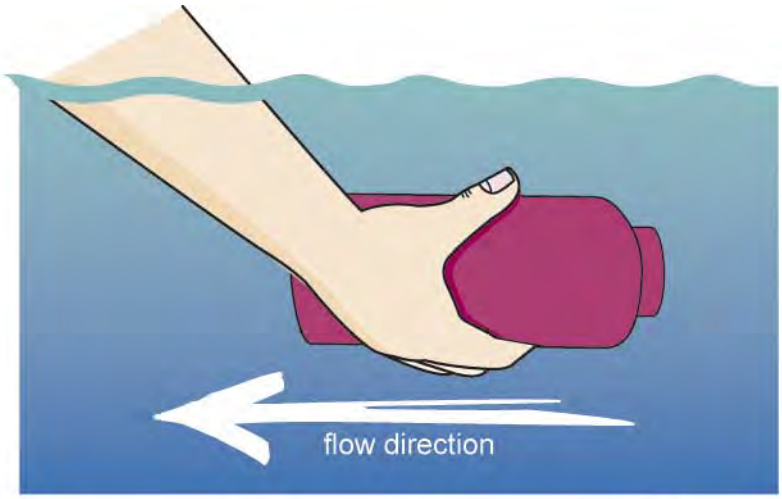


Figure 2. Technique for taking hand-held grab samples (Source: EMAN-N (2005))

6.1 GENERAL PROTOCOLS FOR TAKING SECCHI DISC MEASUREMENTS

Overview

Secchi discs (Photo 5 and Figure 3) are used to provide a visual measure of water clarity or optical depth. The Secchi disc is lowered into the waterbody and the depth is at which the pattern is no longer visible is taken as the measure of clarity. Measurements should be made every two weeks if possible between June and October.

Secchi depth measurements should be in a shady location and the observer should not wear sunglasses. Ensure to record the time of sampling, since this may influence the Secchi measurement. The optimal time for taking a Secchi measurement is mid-day. Take at least two measurements at each sampling site/station and estimate the optical depth based on the mean of these two measurements. Ideally the Secchi disc measurement should be accurate to within ± 1 cm. The higher the Secchi disc reading, the clearer the lake. If the light meter is not operational, determine the approximate euphotic zone (depth of 1% incident radiation [light]) by multiplying the Secchi disc reading by 2.



Photo 5. Secchi disc (Source: CRE Laurentides)

Sources

Développement durable, Environnement et Parcs, Gouvernement du Québec (2007 a), EMAN-N (2005), Alberta Environment (2006 a)

At a glance

1 Take the Secchi reading on the shaded side of the boat using a calibrated cord or chain. (Use a permanent marker to mark intervals as tape wrapped around the rope tends to loosen and slide over time.)

2 Slowly lower the disc into the water until it disappears from

sight and note the depth (Depth 1).

3 Lower the disc down a further 1 m (or until it is well out of sight) then slowly raise the disc until it is visible again and note this depth (Depth 2).

4 The Secchi disc reading is the average of the two recorded depths (Depths 1 and 2). Record the time of sampling. The higher the Secchi disc reading, the clearer the lake. The depth at which the Secchi disc disappears or appears may vary from observer to observer and from day to day due to light conditions.

average of two readings

Other sources

Environment Canada (2009), Nova Scotia Department of Environment and Labour 1996

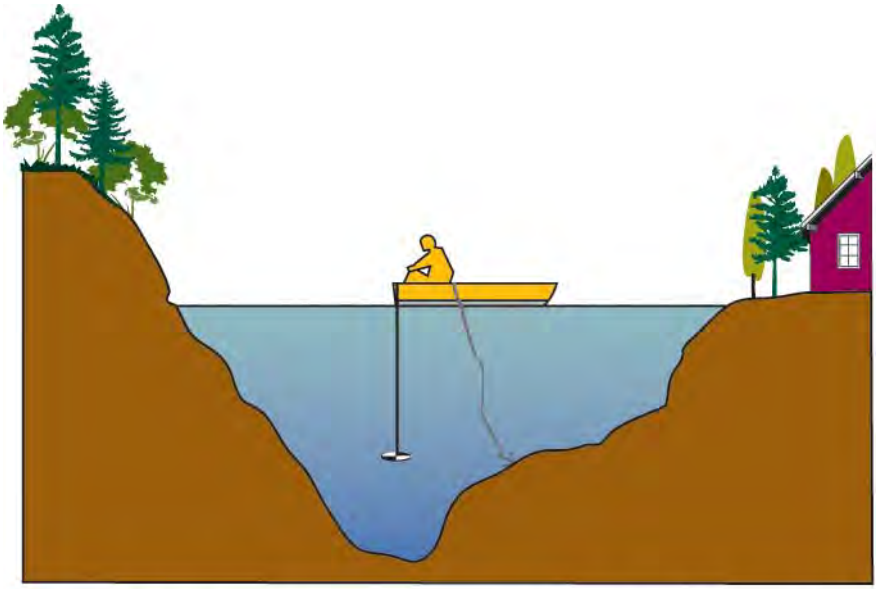


Figure 3. Secchi disc measurements (Source: CRE Laurentides)

6.2 WATER COLUMN SAMPLING TECHNIQUE PROTOCOLS

The Protocols that follow are in relation to sampling specific variables in the water column.

6.2.1 PROTOCOLS FOR SAMPLING THE WATER COLUMN FROM BOATS & AIRCRAFT

Overview

Quality assurance and control measures (see appropriate Protocol) and safety issues (see appropriate Protocol) should be adhered to. The Protocol identifies how samplers should be fastened, where the sample should be collected from, and how to minimize the potential for sample contamination.

Sources

EMAN-N (2005), Environment Canada and B.C. WLAP (2005 c), Environment Canada (2001)

At a glance

sample from the upstream side

1 In moving water, always sample from the upstream side to prevent contamination of the sample from gas or oil. This will make sure that neither your body nor your actions can affect the water being sampled (e.g., by disturbing the bottom material of sediment and biota). Grab samples can be collected while the boat is anchored or drifting along mid-channel.

2 When using a weighted sampler in rivers or lakes, you can either anchor or keep the boat running depending on the circumstances. For example, if there is a danger of ice floes, do not anchor the boat. Keep the engine running to make sure that the boat can be moved out of danger.

grab sample

3 For samples at water depths less than 50 cm, the sample may be collected by hand (grab sample). Dip and fill the bottles directly from the water. Hold the bottle near its base and remove the cap (lid) without touching the inside of the cap. Plunge the bottle, neck downward, below the surface to a depth of about 20 cm. Immediately turn the bottle until the neck points slightly upwards with the mouth directed into the current (see Figure 2). Hold the bottle facing upstream at arm's length while it fills. If conditions permit, before filling the bottle with the sample water, rinse all bottles as directed by the laboratory.

4 Unless specified by the laboratory, fill the bottles to approximately 0.5cm from the top with the sample water. This allows the water to expand and/or also allows for the addition of preservatives. Preserve and complete field analyses as necessary. Cap each bottle immediately after filling, tape the lids closed on all the sample bottles so that they do not accidentally come off and carefully place in a chilled cooler or backpack.

5 For samples collected at depth, follow instructions in the section titled *Protocol for sampling the water column in lakes and streams at depth*.

6.2.2 PROTOCOL FOR SAMPLING THE WATER COLUMN FROM BRIDGES

Overview

The Protocol identifies how samplers should be fastened, where the sample should be collected from, and how to minimize the potential for sample contamination when collecting a sample from a road or bridge structure (Figure 4).



Figure 4. Sampling from a bridge (Ministère de l'Environnement, Gouvernement du Québec (2000))

Sources

Environment Canada and B.C. WLAP (2005 c), Ministère de l'Environnement, Gouvernement du Québec (2000), Environment Canada (1999 Draft)

Special safety concerns

be aware of boaters and water skiers

1 Special care must be taken when sampling from bridges over navigable water as boat operators and water skiers may not be able to see the sampler ropes. It may be necessary to flag equipment so that it is easily visible. Should a boat approach the bridge at the time of sampling, raise the multiple-sampler and temporarily suspend your sampling until it passes.

2 Power lines strung along or close to bridges should also be respected and avoided. At no time should the rope attached to the multi-sampler be draped over a power or telephone line.

use bridge walkway

3 The bridge walkway must always be used regardless of which side it is on. However, in very fast currents it may be necessary to sample on the downstream side on occasion to prevent the multi-sampler from being swept too far under the bridge.

At a glance

1 Sampling should be undertaken on the upstream side of the bridge structure unless safety or other issues make this

Sample on the upstream side of the bridge

impractical. Samples should usually be collected at about mid-stream. The precise location at which the sampling device is lowered from the bridge should be marked to ensure that the same section of the river is sampled each time. Before sampling, check for floating debris.

2 Secure the free end of the rope attached to the sampler to the bridge rail to prevent accidental loss of the equipment. Keep equipment out of the traffic lane where it may be struck by a vehicle. Ensure that the sampling spot chosen is not near any drainage pipes/holes that may be present.

3 Begin to release the sampler and rope, making sure that it does not come into contact with the bridge as this will cause dirt or other contaminants to fall into the sample bottles. The goal of this technique is to ensure that the amount of contamination that might arise is minimized. As it gets near the water, begin a swinging motion of the rope so that the sampler can enter the water body upstream from the bridge.

4 When using a multi-sampler, it is important to allow sample bottles to fill with the fewest number of casts. To do this, the sampler should be swung as far upstream as possible before releasing it and try to fill the sample containers by the time the current has carried it downstream. This also allows the sample to be collected upstream from the bridge, which is potentially closer to where on-ice samples (where used) should be collected.

minimize number of casts

5 Do not allow the sampler to come in contact with the stream bed as this will stir up sediments and contaminate the sample.

Other sources

ISO (2008 a), Ontario Ministry of the Environment (2006), Newfoundland and Labrador Environment and Conservation (1999), BC WLAP (2003)

6.2.3 PROTOCOL FOR SAMPLING THE WATER COLUMN THROUGH ICE

Overview

Quality assurance and control measures (see appropriate Protocol) and safety issues (see appropriate Protocol) should be adhered to. The Protocol identifies how samplers should sample, where the sample should be collected, and how to minimize the potential for contamination when collecting a sample. Sampling locations to be sampled in the winter should be located as close as possible to the open-water.

Sources

Environment Canada and B.C. WLAP (2005 c), EMAN-N (2005), Alberta Environment (2006 a)

Special safety concerns

It is important when sampling on ice that all safety precautions are followed. Identify before venturing on ice the climatic conditions of the previous weeks (i.e. warmer temperatures, rainfall). Ice thickness should be correctly determined with a probe bar. Special care must be taken at outflow and inflow areas; the movement of the water does not allow ice to form thickly.

At a glance

1 It is important to try and keep the sample location the same throughout the seasons. If during the summer the sampling is to be completed near a bridge, the site should be selected far enough upstream from the bridge to avoid contamination from road salt and sand during the winter season.

keep area around drill hole clean

2 Clear loose ice and snow away from the sampling location and drill through the ice with an ice auger, either motorized or a hand auger. The area around the drill hole should be kept clean and free from potential contamination such as gas, dirt from the drill or boots, from snowmobile exhaust, etc. All the ice chips and slush should be removed from the drill hole using a plastic sieve. Allow several minutes for the water to flow freely under the ice, thus allowing potential contaminants to clear, before taking a sample.

3 In shallow streams, samples should be collected approximately 0.2 m below the bottom of the ice using a grab sample if possible. In deeper waters, samples need to be collected with a weighted sampler.

4 Lower a clean, opened 2L bottle in a weighted sampler (with 2 to 3 kilograms of extra weight added) to the desired depth. If sampling in a current, the weight should be enough to reduce the sampler's downstream drift. Lower the bottle into the river at a rate that will give a depth- integrated sample.

avoid stream bottom

5 Do not let the sampler come in contact with the streambed. This may stir up bottom sediments and contaminate the water sample. Raise the filled bottle from the river and use the water to rinse it, if conditions permit. Repeat steps 1 through 4 until the bottle is re-filled.

6 In extreme cold temperatures well below freezing, do not

rinsing in extreme cold

rinse bottles with sample water, the sample water will freeze to the surface of the bottle. Alternately, rinse the sample bottles with laboratory-certified water in the vehicle prior to sampling following normal rinse procedures.

7 Record ice depth and total depth. All sample bottles should be clearly labeled with date, time, location, site, depth, analysis required and sampler identification. Store and transport all samples at 4ºC in a closed cooler. Collapsible jugs of warm water can be used in the cooler between the samples to prevent the samples from freezing. Do not allow the samples to freeze.

Collecting field blanks

1 Winter field blanks for stations that are sampled through ice consist of bottles filled with de-ionized water. These field blanks are processed as follows: remove the cap from the acid-washed field blank bottle containing de-ionized water, and expose the de-ionized water in the bottle to the air for approximately the same amount of time it takes to collect a regular water sample. Using this bottle, fill the metals bottle from field blank sampling kit with the de-ionized water.

2 Remove cap from the regularly washed 2-litre field blank bottle (size may vary with laboratory) containing de-ionized water and expose de-ionized water to air. Fill all remaining bottles from the field blank sampling kit using the de-ionized water from this bottle.

3 Complete the field form. Measurements of air temperature should be included; measurements of water temperature are not required.

Collecting replicate samples

1 After the field blank has been processed, fill a 2L bottle (size may vary with laboratory) marked as a regular sample and fill the metals bottles from the replicate kit and the regular sampling kit at the same time. Next fill a second 2L bottle (size may vary with laboratory) and fill each of the bottles from the replicate and regular sample kits simultaneously. For example, fill a 1L plastic bottle (size may vary with laboratory) from the replicate and regular sample kit together. Repeat until all the bottles from the replicate and regular sample kits are filled.

2 Once the replicate sample has been collected, complete the field form as normal. Ensure that preservation and field analysis of the samples is carried out. Tape the lids closed on all the sample bottles so that they do not accidentally come off. Carefully re-pack the bottles so that they do not break during transport.

Other sources

ISO (2008 a), BC WLAP (2003), Environment Canada (1999), Newfoundland and Labrador Environment and Conservation (1999), Saskatchewan (Undated)

6.2.4 PROTOCOL FOR SAMPLING THE WATER COLUMN IN LAKES AND STREAMS AT DEPTH

Overview

Normally samples are taken from the deepest area of the water body. This type of sampling allows the characterization of water quality at various depths and so provides information as to how water quality changes with depth due to factors such as stratification, sediment release, mass balance, etc.

Sources

Alberta Environment (2006 a), British Columbia MWLAP (2003)

Special safety concerns

When sampling from a small watercraft, it is important to be organized. Space is at a minimum and confusion with ropes from anchors, sampling equipment and additional instruments can cause a tripping hazard. Ensure all water safety gear is worn. Delegate responsibilities, for example, one individual is responsible for taking field measurements or raising and lowering the anchor, while the second individual collects the water samples.

At a glance

collect samples at bow

1 The boat should always be anchored when doing a profile. Samples should always be collected at the bow of the boat. The bow will always point into the wind when anchored, thus reducing the potential for contamination from the boat or motor.

2 It is important that a temperature profile be measured at every metre of depth. This will determine the status of the water body and establish at what depth the samples should be collected.

3 When the water body is completely mixed (uniform temperature), samples should be collected at mid-depth. However, when a temperature profile exists, samples should be collected mid-depth for each layer (you should then record the depths of the major stratified zones- epilimnion, thermocline, hypolimnion).

4 Water from depth can be pumped to the surface (Geopump Sampler or Master Flex) or collected via grab sample at depth (Van Dorn/Kemmerer Depth Samplers). Once the Van Dorn sample bottle (Figure 4) has reached the appropriate depth, a messenger is released to activate the sampler and to trigger both ends of the sampler to close. This ensures that the sample is collected at exactly the correct depth as per the study design. After sampling, all samplers should be rinsed thoroughly and any plants, animals or mud removed at site before the equipment is deployed in another water body. Sampler cleaning ensures that aquatic invasive species will not be transferred to new water bodies.

clean samples first

5 When sampling from a boat, it is important that the **"**clean**"** principle of sample collection be used. This means that all surface water samples are collected first. The process then

moves to sampling at depth, this process will eliminate the possibility of contamination from the field measurements. (it usually takes some time for the field meters to find equilibrium). Samples are collected at increasingly deeper levels, shallow to deep. Once the sample has been collected in the Van Dorn bottle (see below) it is raised to the surface and a hose is attached to a drain valve this removes the water sample from the Van Dorn bottle and fills the laboratory sample bottles. Filtered samples should be completed on shore.

Protocol for a Peristaltic Pump

1 Lower the inlet tubing with the weight attached to the first sampling depth and run the pump for at least 5 minutes to flush the pumping system. Run longer if using long tubing to ensure tube is well flushed.

2 Do not touch the sample bottles with the sampler tubing. Fill the bottles with the sample water from each appropriate depth. Ensure any laboratory requirements for head space and specific parameter requirements are met.

3 Lower the inlet tubing to the next sampling depth - run the pump 1 minute for each 10 m of tubing, before filling bottles.

4 When filling Winkler DO bottles place the outlet tube at the bottom of the bottle, rinse the bottle three times with the total volume of water in the bottle, and slowly remove the tube to prevent any aeration and stopper.

5 Collect samples at identified intervals, stopping at 1 m above the bottom. After all depths have been sampled, raise the pump intake hose above the lake surface and run the pump until the tubing is empty.

6 Shut the pump off and store appropriately.

Protocol for a Van-Dorn or Kemmerer sampler

Only use Van Dorn (Figure 5) and Kemmerer samplers for lake sampling sites > 2 m in depth and > 1 m in depth, respectively. Ensure that the Van Dorn/Kemmerer sampler is functioning properly. Do not touch the inside of the sampler body or end plug. Store the sampler in the open position in a clean place. Calibrate and mark the sampler line starting from the mid-point of the sampler tube to ensure correct water sampling depths.

1 Ensure the sampling bottle is clean (rinse bottles three times if not pre-washed) and then open the sampler by raising the end seals. Set the trip mechanism and lower the sampler to the desired depth.

2 Send the messenger down to “trip” the mechanism that closes the end seals. Raise the sampler to the surface.

3 Allow a small volume of water to pass through the outlet tube to flush the drain valve. This further reduces the possibility

of contamination with water from the previous depth. If collecting Winkler titration field samples, pour off the Winkler DO samples the first time a given depth is sampled to prevent future aeration. When filling Winkler DO bottles place the outlet tube at the bottom of the bottle, rinse the bottle three times with the total volume of water in the bottle, and slowly remove the tube to prevent any aeration and stopper.

flush drain valve

4 Continue to transfer the water sample from the Van Dorn bottle to individual sample containers via the drain valve. Avoid contact with the drain spout to prevent contamination.

5 Collect water samples at the required depths down to 1 m above the lake bottom repeating the above steps. Always work from the top to the bottom of the water column.

Other sources

ISO (2008 a), Newfoundland and Labrador Environment and Conservation (1999), Environment Canada (2009), Nova Scotia Department of Environment and Labour 1996, ISO 1987

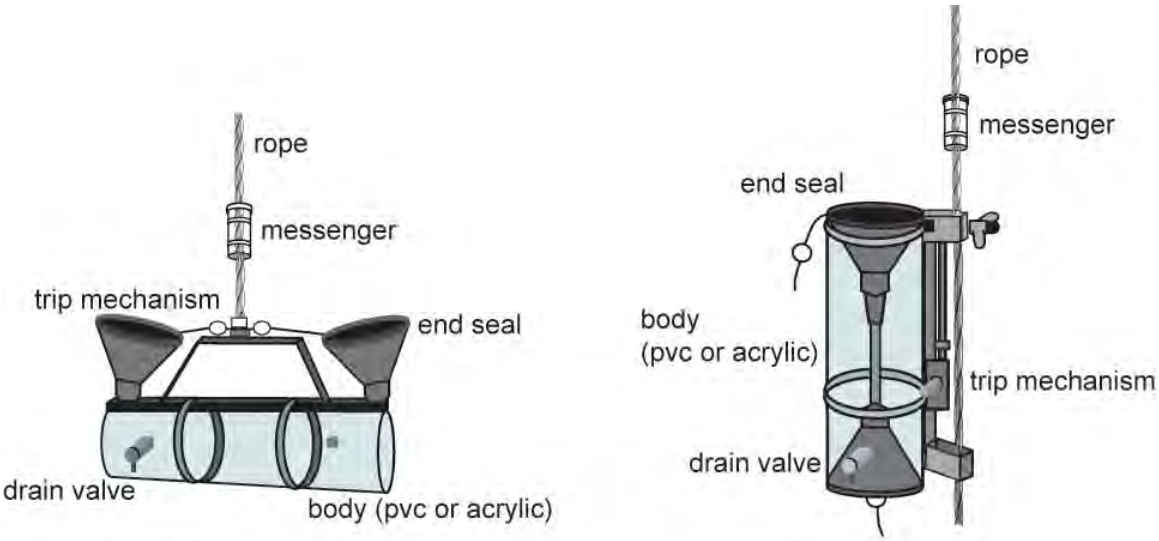


Figure 5. Van Dorn depth water sampler – horizontal and vertical configurations (MWLAP 2003)

6.2.5 PROTOCOL FOR SAMPLING FROM SHORE

Overview

Quality assurance and control measures (see appropriate Protocol) and safety issues (see appropriate Protocol) should be adhered to. The Protocol identifies how samplers should sample from the shore, where the sample should be collected, and how to minimize the potential for sample contamination when collecting a sample.

Sources

Environment Canada and B.C. WLAP (2005), Saskatchewan (Undated), B. C. WLAP (2003)

Special safety concerns

Ensure all safety policies are adhered to when sampling from shore, all appropriate safety gear should be worn (i.e. personal flotation device). In some cases, the sampler should also be tethered to either another person or a stable object.

At a glance

1 Sampling from shore is not applicable in lakes. A sample taken near the shore in a lake will not be representative of the entire lake system.

2 Often, it will not be practical to use a multi-sampler from shore due to the shallowness of the water. In such cases, use an extension rod that will hold the sample containers. When using a sampling rod, ensure to rinse the clamp end of the rod in the stream to reduce possible contamination from a previous site.

3 If the laboratory requires bottles to be pre-rinsed, this should preferably be done at a site slightly downstream from the actual sample location, this prevents contaminants from entering the actual sample bottle.

4 When sampling from shore, always collect water samples facing upstream, this ensures that any contaminants on the sampler do not flow into the sample container. Fill individual bottles one at a time by uncapping the bottle immediately before sampling.

5 When sampling from a rocky outcrop, ensure that the multi-sampler or any type of physical sampler is submerged and the bottles are completely filled.

sample away from bank

6 Sample into the current, away from the stream bank. If for some reason the water body appears to be stationary, submerge the bottle beneath the surface away from the sample location until it is filled. Stationary water bodies should be avoided when sampling, they do not provide a complete sample of the environment.

Other sources

ISO (2008 a), Environment Canada Undated (a), Ontario Ministry of the Environment (2006), Newfoundland and Labrador Environment and Conservation (1999).

6.2.6 PROTOCOL FOR SAMPLING BY WADING

Overview

This Protocol identifies how samplers should enter the stream, where the sample should be collected, and how to minimize the likelihood of sample contamination when collecting a sample (Figure 6).

Sources

Environment Canada and B.C. WLAP (2005), EMAN-N (2005), Ministère de l'Environnement, Gouvernement du Québec (2000)

Special safety concerns

Wading into a body of water is sometimes a necessary method to collect a water sample. However it can be hazardous. Different types of stream bottoms can pose hazards. Bedrock bottoms are smooth and could potentially be covered with algae which can be slippery. Clay bottoms can be deceiving due to the fine nature of the sediment/silt. There is the risk of the sampler sinking, sometimes several inches into the clay. Large rocks or logs can litter the stream bottom, and coupled with low visibility can become a tripping hazard. Deep, fast water is unsafe to enter. It can be hard to maintain balance in fast water, care must be taken when entering this environment. Any samplers who are in these situations should take swift-water training and adhere to all water safety policies. Shallow, fast flowing waters can potentially pose a risk to samplers. If samplers are lulled into a sense of security, they may become careless or take risks, and it is just as easy to slip in these conditions. When wading for a sample, always ensure a personal flotation device is worn, enter the stream/river in a perpendicular manner and face upstream when ready to take the sample.

At a glance

1 Sampling from shore is not applicable in lakes. A sample taken near the shore in a lake will not be representative of the entire lake system.

ascertain that the streambed is safe

2 Explore the streambed for large obstacles or holes if unfamiliar with the stream. Be observant and note if the stream/streambed changes at times. Wade carefully into the stream with a wading stick and safety line. When sampling during winter months, be aware of large ice pans that could knock you off balance or trap you. In colder temperatures, care must be taken when walking on rocks due to the formation of ice on the rocks and other surfaces.

3 Once you are comfortable and assured that it is safe, sampling can begin. When wading to sample, always collect the sample while facing upstream, this ensures that contaminants that may be on the sampler do not flow into the container.

4 Always sample into the current away from the stream bank.

5 If the laboratory requires the bottles be pre-rinsed, complete it at a site downstream of the actual sample location. This will

prevent contaminants from entering the sample bottle. Remove the lid from the bottle and hold it without touching the inner surface.

6 If for some reason the water body appears to be stationary, submerge the bottle beneath the surface away from the sample location until it is filled. Stationary water bodies should be avoided when sampling, they do not provide a complete sample of the environment..

7 Samples should be collected in the **"**clean-first**"** mode. For example bacteriological samples are extremely sensitive to contamination and should always be collected first before any bottles are rinsed.

8 Grasp the bottle well below the neck. Plunge it beneath the surface in front of you with the opening facing directly down then immediately orient the bottle into the current. Avoid collecting surface scum and film.

9 Once the bottle is full, remove it from the water by forcing it forward (into the current) and upwards.

Other sources

B. C. WLAP (2003), ISO (2008 a), Ontario Ministry of the Environment (2006), Newfoundland and Labrador Environment and Conservation (1999), New Brunswick 2000, Saskatchewan (Undated)



Photo 6. Wading and sampling (Environment Canada, B.C. WLAP 2005)

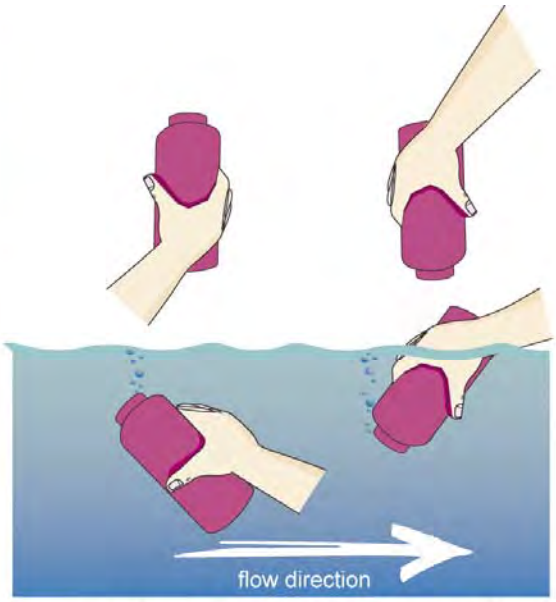


Figure 6. Procedure for collecting sample (Source: Ministère de l'Environnement, Gouvernement du Québec (2000))

6.2.7 PROTOCOL FOR SAMPLING WITH USE OF A MULTI-SAMPLER

Overview

The multi-sampler (See examples in Photo 7 and Figure 7) is an option for collecting several sample containers at one time. This ensures that the equivalent mass of water is collected for analyses at the same time.

Sources

Environment Canada and B.C. WLAP (2005 c), Ministère de l'Environnement, Gouvernement du Québec (2000), Environment Canada (2003 c)

At a glance

1 The multi-sampler should be rinsed at least once in the site water to remove any loose dust/debris and contaminants. Once rinsed load the sample bottles.

2 Loosen the caps on the bottles when placing them in the sampler. Each bottle has a designated location in the sampler, it is secured by the sampler top and the opening should be above the top surface.

each bottle has a designated position

3 Assemble the sampler (including the lid, handle and rope, as necessary). Ensure to remove the caps from the bottles just before sampling. If applicable, place the tops in the plastic bag to keep them free from contaminants.

4 The lid from the multi-sampler prevents dirt/water from the rope, from entering the sample after collection. Please note that during high flow, the lid may cause substantial drag.

5 The sampler Plexiglas top should fit well over the bottles and the holes in the top should be aligned with the upright posts of the sampler. Ensure that the handle is securely tightened, it may twist off in swift currents.

6 **Collecting Replicate Samples:** Collect an additional sample in exactly the same manner and location as completed for the initial (regular) sample. Ensure there is no floating debris to disturb the sample. Add preservatives to applicable bottles.

7 **Field Blanks: These should be processed first (i.e. before regular or replicate samples) to ensure that no potential contamination occurs from any residual river water that may remain on the sampling equipment.** Remove bottles containing water from kit and place in sampler in the normal manner. For example, if bottles are loaded on the bridge then load the field blanks on the bridge as well.

8 When ready to process the blanks, remove the caps from the bottles and store them in a plastic bag. Lower sampler to the surface of the water body (approximately 1 metre above the water's surface if sampling from a bridge).

9 Bring up the sampler, and replace the caps. Preserve the blanks as normal for regular samples, if required. Complete the data card as usual. Store the multi-sampler in a clean container.

10 Re-pack the sampling kit in the normal fashion and ship it to the laboratory along with the regular and replicate samples.



Photo 7. Assembled multi-sampler (Environment Canada and B.C. WLAP (2005 c))



Figure 7. Multi-sampler (Source: Ministère de l'Environnement, Gouvernement du Québec (2000))

6.2.8 PROTOCOL FOR COMPOSITE SAMPLING

Overview

Composite samples can be composed of individual sub-samples collected at different times or depths. The samples are then made into one sample using approximately equal volumes of sub-samples. In the case of a flow-proportional sample, the volumes of the sub-samples are determined in relation to the flow at the time the sample is collected (relative to the total time represented by the composite sample). Such a sample provides an estimate of average water quality.

Sources

Alberta Environment (2006 a), BC WLAP (2003)

At a glance

Where the composite sample is comprised of grab samples, the following procedure should be adopted for grab sampling at each specific location.

1 A pre-cleaned intermediate sample bottle should be rinsed with sample water prior to final collection or according to laboratory instructions. Submerge to required depth, uncap and fill bottle, ensure that the bottle is recapped at depth (to avoid contamination). If specified by the laboratory, repeat this procedure twice more before filling the container and recapping at depth.

2 During sampling avoid submerged vegetation and try to ensure the sample is free of obvious foreign material. Obvious foreign material is not representative of the water column (e.g. algae, sediment, organic matter, etc.).

3 Once sample is collected pour it into the composite sample bucket (pre-cleaned as per laboratory instructions). Continue to collect water samples filling the bucket until sufficient composite volume has been collected (do not rinse again). Keep the bucket covered during sampling to prevent any contaminants from entering the water.

use intermediate container

Other sources

ISO 1987

6.2.9 PROTOCOL FOR COLLECTING INTEGRATED AND/OR COMPOSITE INTEGRATED SAMPLES

Overview

The collection of a sample across a range of depths using equal volumes of sub-samples is referred to as depth-integrated sampling (e.g. spanning the euphotic zone). Composite integrated sampling is the collection of approximately equal volumes of sub-samples at various depths and sites, The samples are then pooled to form a single composite sample. Such a sample accounts for horizontal and vertical spatial heterogeneity and provides an estimate of average water quality. It can be used at several sites in a lake (area-integrated) or several sites across a stream (cross-section). The protocol detailed relates to the use of a sampling tube; however a Van Dorn or a Kemmerer sampler can also be used.

Sources

Alberta Environment (2006 a), Environment Canada (2009), US EPA (2005)

At a glance

Composite integrated samples can be made of individual grab samples. Ensure that the samples are collected according to the applicable protocols (e.g., Kemmerer sampler, multi-sampler, etc.) These samples can also be collected using a sampling tube as described below.

1 When collecting a composite integrated sample using a tube, rinse the sampling tube, sample bucket and lid three times with sample site water.

2 Place the sample bucket in a light proof container (or black plastic bag) to reduce light penetration and associated phytoplankton chlorophyll production. Place the open end of the sampling tube in the hole in the sampling bucket lid.

3 Lower the weighted end of the tube slowly (approx. 1 m per sec.) and vertically though the euphotic zone. If the depth of the sample site is less than the depth of the euphotic zone, only sample to within 1 m of the bottom.

4 Pull the tube up into the boat. Check for sediment in the water sample before it leaves the tube. If there is no sediment in the tube, invert the foot valve and drain the water into the sample bucket. If there is sediment in the tube, discard the sample, rinse the tube 3-5 times with lake water, move the boat a few metres, and repeat the haul to a shallower depth. If sediment gets into the sample bucket, discard the sample and start over.

check for sediment

5 Ensure that the sampling tube and bucket are well cleaned and rinsed.

Other sources

ISO 1987

6.3 PROTOCOL FOR MONITORING FOR PHYSICAL CHARACTERISTICS, NUTRIENTS, IONS, AND METALS IN GRAB SAMPLES

Overview

This protocol outlines the general procedures for collecting a grab sample. Following this protocol will reduce the risk of contamination and ensure that the sample is collected safely.

Sources

Environment Canada and B.C. WLAP (2005 c), Environment Canada (2006 b), Alberta Environment (2006 a)

At a glance

bottle usage

1 Only use sample bottles provided by the analytical laboratory specific for each analysis. Reject any uncapped bottles (especially those for analysis of trace metals and other contaminants). Ensure there is always at least one extra set of bottles on hand. When sampling store caps in a plastic bag.

2 Ensure bottles remain capped until sample collection and are stored under clean conditions (e.g., in cooler, plastic bag, etc). Vehicles should also be kept reasonably clean to limit potential contaminant sources.

do not touch cap or inside of sample bottle

3 Only leave the sample bottle uncapped while rinsing (if rinsing is required), filling the bottle and/or adding preservatives. Do not touch the cap liner or the inside of the sampling bottles (even when wearing gloves). Only the water sample and the preservative should touch the inside of the sampling bottle or the cap.

4 Review the documentation accompanying the sample bottles. The documentation should refer to sample collection, storage and transport requirements. If necessary consult with laboratory personnel regarding any specific instructions. If samples are to be submitted close to or on the weekend, make arrangements with the laboratory to ensure sample holding times are still enforced.

read MSDS

5 Ensure all preservatives are sealed and within the marked expiry date. Add preservatives to samples in an area away from potential sources of contamination (e.g., roads and car parks [dust and hydrocarbons]). Become familiar with the MSDS for all preservative chemicals. When handling the preservatives always wear safety glasses and gloves.

collect samples at bow of the boat

6 Samples should always be collected at the bow of the boat. If anchored from the bow of the boat, position the bow upstream. This reduces the potential for contamination in the sample from the motor or the boat itself. Ensure the sample is collected in good flow, not in an eddy or backwater. When grab sampling, face upstream to avoid any stirred-up sediment and sample below the water surface.

7 When not in use, keep all sample collection equipment in sealed clean plastic bags or in a clean cooler.

no smoking

8 Sampling personnel should wear un-powdered latex or

or eating polyethylene disposable gloves while collecting water samples and refrain from smoking or eating. If gloves are not worn, jewelry and watches should be removed. Do not use insect repellent if sampling by hand or be very careful that insect repellent does not come into contact with the samples.

9 While sampling avoid submerged vegetation and ensure sample is free of obvious foreign material not representative of the water column at time of sampling (e.g. algae, sediment, organic matter, etc.). Cap tightly and store the water samples at 4ºC in a closed cooler for transport.

10 Filter and/or add preservatives immediately or as soon as possible after sample collection. If the samples are to be laboratory-filtered, ship them as soon as possible. Ensure the samples arrive at the laboratory well within the specified hold time for un-filtered and un-preserved samples.

Other sources

B. C. WLAP (2003), ISO (2008 a), Ministère de l'Environnement, Gouvernement du Québec (2000), Environment Canada Undated (a), Environment Canada (2008 draft), Ontario Ministry of the Environment (2006), Newfoundland and Labrador Environment and Conservation Newfoundland and Labrador Environment and Conservation (1999), Environment Canada (1999) draft, New Brunswick 2000, Saskatchewan (Undated), EMAN-N (2005), Environment Canada (2009), Nova Scotia Department of Environment and Labour 1996, Environment Canada (2003 a)

6.4 PROTOCOL FOR SURFACE LAYER SAMPLING

Overview

The surface micro-layer has been defined as the top layer of surface waters, approximately 50 microns thick. The micro-layer is important for aquatic habitats, as it is used by many species as their "nurseries" for egg and/or larval forms. Surface layer sampling is conducted to determine the presence of trace organic contaminants in surface films present in surface waters. The surface micro-layer can also be an area of high contaminant concentrations. A wide mouth vessel can be used to collect surface films. Efforts should be made to collect the sample using only 100 to 200 mL of dichloromethane (DCM) since too much DCM hinders analytical recovery of the contaminants. Drum rollers can also be used.

Sources

ISO (2008 a), BC WLAP (Undated)

Special safety concerns

Avoid coming in contact with DCM it may cause irreversible health effects. Ensure you have read the MSDS and use appropriate personal protective gear.

At a glance

Grab samples

1 Label bottles with the site name, sample date and sample type.

2 Do not rinse bottles. Do not touch the inside of the lid or bottle mouth.

3 Wearing suitable safety gloves, rinse the Teflon funnel with DCM from the squirt bottle. Catch all waste DCM into a closed container.

4 Hold the glass plate by the handle and rinse the other side of the plate using DCM from the squirt bottle. Clean entire area of glass plate and capture all waste DCM into a closed container.

keep glass plate on water surface

5 Gently lower the glass plate until it comes in contact with the surface of the water. The plate and the water surface will form a natural adhesion. Hold plate to the surface for a fraction of a second then remove from water's surface. Be careful not to submerse the plate below surface.

6 Insert Teflon funnel into trace organic bottle.

7 Rinse glass plate with DCM squirt bottle into the Teflon funnel. Rinse entire surface area of the glass plate collecting all the DCM into trace organic bottle. Collect about 100 mL – 200 mL of DCM.

Drum roller

1 A drum roller can be employed over the side of a boat adjacent to the aft deck upstream from the vessel's outboard motor.

2 Set the boat forward at a speed of between 2 and 3 knots to equal the drum speed and to minimize wave action on the

sampler. This speed may have to be varied depending on the actual sample conditions.

3 Hold the sampler off the hull of the vessel and apply pressure to the tray scraper of the rotating drum (Photo 8).

4 Estimate the area traversed in sampling. Do not cut across an earlier path of the vessel to avoid contamination from the vessel motor.



Photo 8. Use of drum roller (Source: B.C. Ministry of Environment (Undated))

6.5 PROTOCOL FOR AUTOMATED SAMPLING (MULTI-PROBES)

Overview

In situ measurements of variables such as pH, DO (dissolved oxygen), temperature, conductivity, and turbidity are routinely taken automatically over time (long-term deployment). Typically, the data are collected using multi-probe instruments called sondes that are positioned at mid-depth in rivers and streams. Long-term deployment of a multi-probe system provides an almost continuous record of temporal changes in parameters that can be used for a variety of purposes. Weather may limit year-round operations for some automated stations in Canada.

The location of each potential site depends on the purpose of the study, accessibility, safety, stream morphology, seasonal flow patterns and cross-section variability. All automated water-quality sampling stations must be accessible (near a road or by aircraft such as, helicopter), safe (shallow sloping banks), and have a minimal chance of being damaged or destroyed by natural forces (windfall of trees, snow pack and ice). Protection from vandalism is imperative. In general, the three components to keep secure are the sonde (use protective deployment tube), the accessory equipment (data logger, batteries, and additional power sources), and the cables.

There must be a pool of water removed from riffle areas in which the sensor can be deployed. A straight stretch of stream above and below the sampling location is required to minimize the cross-sectional variability. During high flow periods, the instruments may be removed from the stream. The variation in the water chemistry across the stream at the sampling site should be determined before the station is established.

Sources

B.C. Ministry of Environment (2006), United States Geological Survey (2006)

Special safety concerns

Refer to the Protocols for working near swift water and working in remote areas

How they differ

The reader is referred to the actual references cited because the protocols for different situations and types of equipment can vary significantly and the detailed procedures for operating these stations are beyond the scope of this manual. This manual provides only a general overview of techniques.

At a glance

Components

1 Equipment used in automated sampling has three parts: the sensors used to collect the data; the accessory equipment which

includes a combination of a data logger, power source and a means of retrieving the data; and the cables and adapters. These individual parts must work together and be protected.

2 **Sensors** (electrical, electrochemical, or optical) respond to changing water conditions with an output signal that is processed, displayed and recorded. The choice of sensor depends on the parameters, the required specifications, the operating conditions and required life span. Several sensors are usually contained in a multi-sensor sonde (Photo 9).

3 **Data loggers** may be contained within a sonde or connected externally. Data filtering and processing is completed within the data loggers. The time interval of the recorded samples is determined by the user. The duration of individual samples is a function of the sensors.

4 Possible **sources of power** are internal batteries (which are contained within the sonde), external batteries and solar panels (used for satellite transmission). **Cables** (instrument and site-specific) connect the external batteries to the sonde or the solar panel to the external battery. The connection process is not addressed in this manual. Depending on the capacity required (amp-hours); external batteries should be a good quality gel-cell type, or a deep discharge sealed lead-acid style. Residential (110V) and solar power sources can be used as auxiliary power to the primary battery for recharge purposes. Residential and solar power sources should not be directly connected to an instrument, as voltage spikes can occur and cause the entire system to fail. Use of a voltage regulator is recommended when connecting an auxiliary power source to the primary battery.

5 **Communication and data retrieval** can be done on-site with a laptop or hand-held display. Data retrieval can also be achieved remotely in real-time using phone or satellite communication.

6 **Deployment** refers to the way that the sensor comes into contact with the ambient water. There are two main deployment methods. The sensor is either placed in the stream or the stream water is brought out of the stream to the sensor. The former is called an *in situ* or in-stream system and the latter is called a "flow-through-system" or a side-stream system. With *in-situ* systems the sensor may be placed in tubes that are fixed vertically or positioned at an angle to the stream bank, or contained in a retractable boom (Figure 8). This reduces the movement of the instrument and the possibility of it being swept away in high flow.

Monitoring basics

frequency of

To ensure the integrity of the data being recorded, all multi-probes must be serviced. During the servicing, the stream data can be downloaded and collected for analysis and review.

field visits

Servicing an instrument is completed during a field visit.

1 The frequency of the field visits depends on the stream conditions. New sites should be visited every two to three weeks. At sites where there is no remote real-time communication, the frequency should not be greater than the longest period of data that the operator is willing or allowed to lose. Some remote areas can be visited every 30 days.

2 Field visits include procedures to be undertaken on-site and/or in a stable environment (sheltered area with a stable temperature for working and storing calibration standards).

3 A cleaned portable sonde is used for comparison against the deployed field sonde. The portable sonde must be within the same specifications as the deployed sonde. There is the possibility that during deployment the parameter sensors become fouled, drift out of calibration or malfunction resulting in sensor error. (See source manuals). During transport of sondes, the parameter sensors must be kept from drying out and should be kept moist.

4 A list of field supplies should be prepared and consulted prior to and during each field visit.

5 Laboratory samples for some parameters (specific conductivity, dissolved oxygen, pH and temperature are field-measured variables) may be required. Several jurisdictions collect samples on each site visit. Other jurisdictions do not routinely collect samples and base the findings on the multi-sondes. This is acceptable if the data is obtained from sensors that are inspected and calibrated routinely.

minimize bubbles

6 Stream turbulence can produce bubbles that interfere with the readings on optical sensors (e.g., turbidity and chlorophyll-*a*). However wipers present on these sensors can remove the bubbles, this reduces the risk of an error reading. If the sensor does not have a wiper, angle deployment is preferred to prevent bubble accumulation.

7 The sensors must be placed effectively within a water column. It is important to ensure that there is a minimum distance from the surface, as this will eliminate the effects of solar radiation. There should also be a minimum distance from the substrate to avoid effects of bedload transport.

Recommended protocol

When cleaning or calibrating a multi-probe, ensure access to a temperature stable and protected location. Some chemical standards used to calibrate the multi-probe are temperature-sensitive and it is always important to reduce the likelihood of contamination. In most cases, the data is collected at the field site. Pre-cleaning data can be collected in stream water at the field site. The post-cleaning data can be collected in stream water transported to the stable environment away from the field

site (this may not be possible for all sites) or during re-deployment. To ensure the changes occurring during the transport of stream water are captured, each reading with the deployed (D) sonde is paired with a reading of the portable (P) sonde. The readings of the portable sonde are used to determine the change in the stream water during its transport from the stream to the stable environment.

1 Before a site visit, organize necessary field supplies, calibrate applicable portable sonde and ensure that the required laboratory supplies are available. In the very first site visit the deployed instrument will also have to be calibrated and prepared for long-term deployment.

2 At the field site, inspect the site for damage to equipment or any applicable changes to deployment site (i.e. high flow, turbid water). The logged deployment data can be downloaded. Compare the portable sonde against the field deployed sonde *in-situ* or from “a bucket of stream water”. If applicable collect stream samples. Clean the deployment tube of any debris or sediment that may be caught inside. Transport the sondes to a stable location for complete calibration and clean.

3 When the instrument is removed to a stable environment for calibration and cleaning, firstly inspect the condition of the sonde and its sensors, clean the instruments’ sensors as specified by the manufacture. Place the instrument "in a bucket of stream water" and record all data. Continue with calibration, record information on calibration standards, collect the calibration drift data (measurement in calibration solution prior to re-calibration), and calibrate (using standard calibration standards) or if necessary replace the sensors. Wrap the guard in a damp towel or replace the guard with some water in the calibration cup or with a moist sponge on the bottom of the calibration cup. Put the cap/plug on the sonde to protect the electronic connections and prepare the sondes for transport to the field.

4 The difference between portable sonde readings is a result of changes occurring in the natural environment of the stream. The difference in deployed sonde readings is the calculated difference due to fouling. The amount due to fouling is obtained by subtracting these two differences.

5 When re-deploying the field instrument, record the re-deployment data firstly "in a bucket of stream water”, and then *in situ*. Each new sampling period starts with freshly calibrated and cleaned sensors to minimize sampling drift during the deployment period.

6 After each field visit data grades or ratings are calculated.

Other sources

ISO 2003 (b), ISO (2008 a), Nova Scotia Department of Environment and Labour Undated





Photo 9 Left. A sonde with a number of probes and a wiper (Source: B.C. B.C. Ministry of Environment (2006))

Photo 10 Right. Slotted deployment tube (top view on right - prevents access to sonde and sensors and helps support sonde) (Source: B.C. Ministry of Environment (2006))

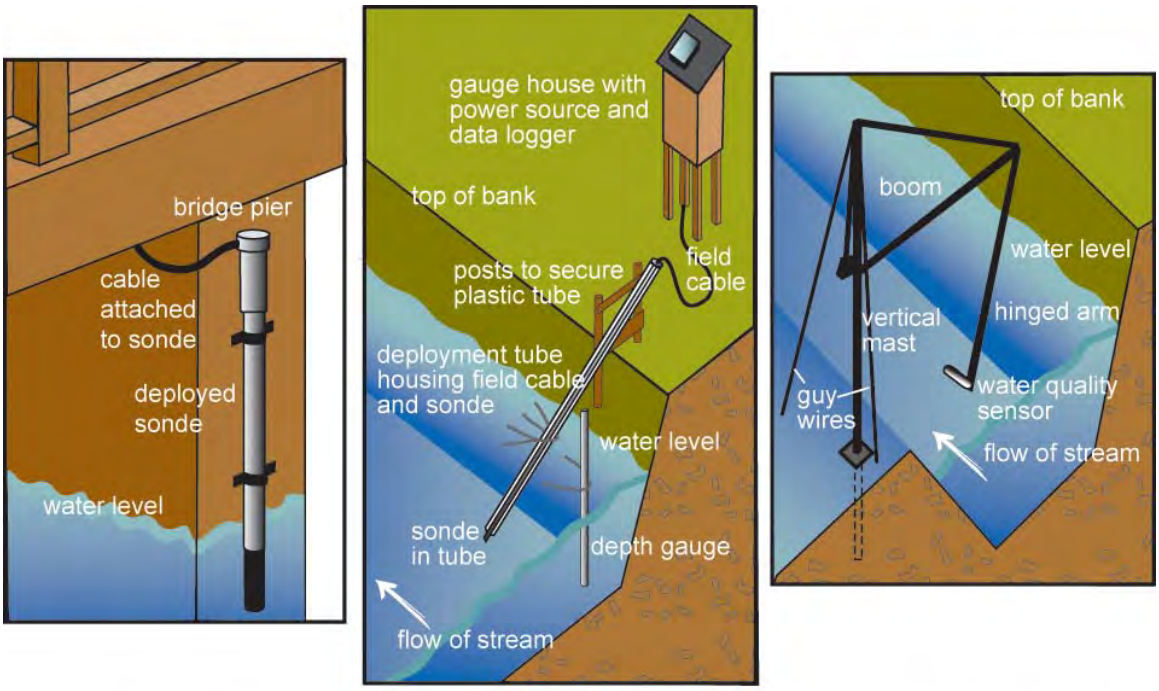


Figure 8. Deployment tubes (from left to right: vertical, angle and retractable boom) (Source: B.C. Ministry of Environment (2006))

6.6 PROTOCOL FOR BACTERIOLOGICAL SAMPLING

Overview

Samples are typically analyzed for a combination of the following bacterial parameters: total (rarely) and fecal coliforms, *Escherichia coli* (*E. coli*), fecal streptococci, and enterococci. Due to the high risk of potential contamination of the sample during collection, care must be taken when collecting bacteriological samples to ensure sterile conditions. Sample containers should be filled as per laboratory instructions and samples should be kept out of the light and chilled on ice (do not allow to freeze). Always collect bacteriological samples first, if sampling from a boat, obtain the sample from the upstream side of the boat.

Bacterial samples are time-sensitive; it may not be possible to transport samples to a laboratory for analysis in time. A mobile bacteriological water quality kit can be purchased from suppliers and can be used to analyze total coliform, fecal coliform, *E. coli*, and fecal streptococci. The kit comes with two incubators that can plug into vehicle cigarette lighters, a binocular microscope, Petri dishes, squared filter paper, media, filtration equipment, sterilizing alcohol, and flame.

Sources

Environment Canada and B.C. WLAP (2005), Alberta Environment (2006 a), EMAN-N (2005)

Special safety concerns

The sampler should not exceed a depth where there exists a reasonable possibility that water might unexpectedly enter the gumboot or hip-wader. Ensure any safety policies are adhered to when sampling, including all appropriate safety gear worn (i.e. personal flotation device). In some cases, the sampler should also be tethered to either another person or a stable object.

At a glance

Beach/shore sampling

1 Wade out to knee deep water, aiming for beyond the point where wave action affects the lake bottom (avoid contamination by suspended sediments). Avoid disturbing the sediment/substrate. Wait 2 to 3 minutes to ensure any sediment disturbed by wading has settled.

2 Always hold bottle upright and by the base. Keep sample bottle closed until needed. Holding the bottle upright and by the base, in one continuous motion submerge till the bottle opening is approximately 30 cm below the water surface or other specified depth, facing towards the current.

3 Uncap and fill the sample bottle as required by the laboratory, cap and bring to the surface. Immediately place the bottle in a closed cooler with ice packs or hot water bottles,

depending on the season.

4 If necessary, sample bottle can be filled from a clean (sterile) intermediate container.

5 Take several individual samples along the length of the beach.

Sampling from boat

1 Sample from the bow of the boat to prevent potential contamination from the boat or the outboard motor.

2 Keep sample bottle closed until needed. Take a sample at arms length from the boat and sample facing towards the current (the direction the boat is facing). Always hold bottle upright and by the base. In one continuous motion submerge till the bottle opening is approximately 30 cm below the water surface or other specified depth.

3 Uncap and fill the sample bottle as required by the laboratory, cap and bring to the surface. Immediately place the bottle in a closed cooler with ice packs or hot water bottles, depending on the season.

4 If necessary, the sample bottle can be filled from a clean (sterile) intermediate container.

Sampling at depth

1 Sample from the bow of the boat to prevent potential contamination from the boat or the motor. Ensure that the person in the stern is providing counterbalance (working over the opposite side of the boat).

2 Collect a sample of water at the desired depth with a depth sampler.

3 Do not rinse the bottle or touch the inside of the bottle or cap, and always hold bottle upright and by the base. Keep sample bottle closed until needed.

4 Fill the sample bottle as required by the laboratory and immediately cap the bottle securely.

5 Immediately place the bottle in a closed cooler with ice packs or hot water bottles, depending on the season.

Other sources

B. C. WLAP 2003, Newfoundland and Labrador Environment and Conservation (1999), Environment Canada (1999) draft, NB 2000, Saskatchewan (Undated), Environment Canada 2002 (a)

6.7 GENERAL PROTOCOL FOR COLLECTION OF WATER SAMPLES FOR LABORATORY BIOASSAYS

Overview

The physical collection of a sample for liquid phase bioassay testing will vary only slightly between the different bioassay types. The only major difference will be; the volume of material required to complete the requested bioassay(s) and the dilution series. It is strongly recommended that field staff consult the laboratory for confirmation on the amount of liquid required to conduct the requested bioassay(s).

Sources

British Columbia MWLAP (2003)

At a glance

1 Receiving water should be pumped from the designated sampling depth using clean polyethylene tubing into a clean polyethylene or polypropylene container.

use non-toxic containers

2 Containers for storage and transportation of samples must be made of non-toxic material such as laboratory-cleaned glass. The containers must be new or thoroughly cleaned and dried, Rinse the containers with clean water, then with the sample to be collected. The container must be filled with sample to exclude air and then be sealed.

3 Labeling must include: sample type, location, date, time of collection, and name of sampler.

4 Samples should be kept from freezing. If more than two days are spent in transit samples should be kept dark and at a temperature of 1°C to 8°C.

6.8 PROTOCOL FOR SAMPLING CHLOROPHYLL-A

Overview

Chlorophyll-a samples are collected like other samples, either as grab samples or as composite samples. The difference comes in subsequent sample handling, where samples are filtered and the filter is analyzed by the laboratory.

Sources

Alberta Environment (2006 a), Environment Canada (2009)

At a glance

Filter using only the apparatus and flask designated for chlorophyll-*a* (do not acid wash). Do not exceed 7 psi or 48 kPa when pumping through a filter. Triplicate filters are required by some jurisdictions.

1. Rinse the graduated cylinder with distilled/de-ionized water.
2. Mix the sample for 30 seconds before pouring off the first replicate (if replicates are being used).
3. For lake samples, filter 50 to 500 mL of sample through a 47 mm GF/C glass filter and record the volume (use tweezers when handling the filter).
4. For river samples, filter 500 to 1000 mL of sample through a GF/C filter and record the volume. If the water is very turbid, filter what you can through two filters and combine in one tube for submission to the laboratory. Note total volume and "two filters" on field sheet. Filter just enough of a sample to get a light green/brown colour on the filter and do not clog the filter.
5. Rinse the graduated cylinder and the sides of the filter funnel with distilled/de-ionized water and pass this rinse water through the filter.
6. *add preservative* After most of the sample has passed through the filter (about 100 mL remaining) add 1 to 2 mL saturated $MgCO_3$ solution.
7. Remove the filter and using tweezers, avoid touching it with your fingers as they may have acids on them.
8. Store the filter in a freezer (below minus 20°C).

6.9 PROTOCOL FOR SAMPLING MERCURY

Overview

Extreme care should be taken when sampling for mercury in the water column. Mercury levels being measured are so low that even a miniscule amount of contamination can impact the results. Extraordinary attention must be given to sample collection.

Sources

Environment Canada (2006 b), Environment Canada (2008 draft), Saskatchewan (Undated)

At a glance

mercury samples

1 Samples should be collected in pre-cleaned bottles (some jurisdictions use Teflon bottles that are then stored in plastic containers). Use preservatives supplied by the laboratory. The bottles should not be rinsed.

2 Wearing gloves, fill the bottle according to protocols for grab sample collection. Add necessary preservatives. Invert the bottle after capping to ensure proper mixing of the preservative with the sample.

3 Alternately, Environment Canada specifies that mercury samples should be collected, wearing gloves and using an ISOMET sampler. This sampler consists of a clamp that holds a specifically cleaned Teflon bottle at the end of a long hollow pole (sampler body). An un-capper above the bottle clamp is attached through the sampler body to a handle at the other end of the sampler. This tool allows the user to grab the bottle lid, to unscrew, open, and re-close the bottle underwater by manipulating the handle and not touching the bottle itself (Photo 11).

4 Rinse the end of the sampler in ambient water, remove it from the water and open the bottle clamp (with a gloved hand) by unhooking the hinge (Photo 12). Remove a Teflon bottle (in its plastic container) from the cooler, and open the lid of the plastic container.

5 Using the plastic container (gloved hands if necessary) to position the bottle, place the bottle into the open bottle clamp. Ensure that the ridges along the side of the bottle, line up with the grooves in the bottle clamp and that the point that the ridges end on the bottle is lined up with the bottom of the bottle clamp itself. This will ensure that the un-capper will be able to grasp the bottle lid properly. Also ensure that the bottle is placed into the clamp straight (not crooked) as this could prevent the un-capper from working properly. Once the bottle is in the bottle clamp, close the bottle clamp to secure the bottle, then push the sampler handle down as far as it will go. This will move the bottle un-capper down onto the lid of the Teflon bottle, gripping it tightly.

6 Holding the sampler by the handle end, submerge the bottle into the water,. Make sure the bottle/bottle clamp assembly is

well below the surface of the water.

7 To fill the bottle, turn the handle counter-clockwise which will turn the un-capper counterclockwise, unscrewing the bottle cap. After it has rotated a few turns, pull up on the handle, pulling the bottle cap away from the bottle (Figure 12), allowing it to fill with water. When there are no longer any bubbles, the bottle is full. Keep the bottle/bottle clamp assembly in-place under the water, push the sampler handle down to push the lid back onto the bottle, and turn it clockwise until snug to screw the lid back onto the bottle. Once the bottle is full and has been re-capped, pull up on the sampler handle one more time to release the bottle lid from the un-capper. Keep the bottle under the water at this point but move it up close to the surface to verify that the bottle has filled and has been closed properly.

8 Pull the whole sampler out of the water. With clean, gloved hands, and using the same plastic container that the bottle came in, catch the bottle, unhook the bottle clamp to release the bottle and let it slide into the plastic container. Close the container.

9 Place the bottle in a cooler and store at 4°C.



Photo 11. ISOMET sampler (Source: Environment Canada (2008 draft))



Photo 12. ISOMET sampler under water
(Source: Environment Canada (2008 draft))

6.10 PROTOCOL FOR MICROBIAL SOURCE TRACKING

Overview

Microbial source tracking is a specialized area of determining the source of bacteriological contamination. Numerous approaches have been used to determine potential sources of fecal contamination and these methods are at various stages of development and validation. One method cannot answer all questions and it is likely that this will not change in the near future. This protocol focuses on collection of samples for microbial source tracking (MST). Methods for MST analysis are dynamic with a number of new approaches being developed such as gene chips with toxin genes and/or fecal indicator sequences, and biosensors for the detection of target organisms. Methods currently used for MST fall into two broad categories, genotypic versus phenotypic analysis of either cultivated target organisms, or cultivation-independent approaches by direct analysis of samples from the environment.

Sources

US EPA (2005)

At a glance

1 Composite samples are preferred to grab samples in order to include more of the entire cross-sectional area or volume of the sampled water body.

2 Taking several replicate samples or compositing samples over time helps to even out short-term variability.

collect source library with samples

3 The existence of transient animal populations implies that the known-source library may not be useful in all seasons. This stresses the need that the known-source library should be collected concurrently with water samples. Different sources of fecal contamination could be expected in storm flow from base flow.

4 Collect a sample of water at the desired depth with a depth sampler using precautions to minimize contamination.

5 Do not rinse the bottle or touch the inside of the bottle or cap, and always hold bottle upright and by the base. Keep sample bottle closed until needed.

6 Fill the sample bottle as requested by the laboratory and immediately cap the bottle securely.

6.11 PROCEDURES FOR PHOTOSYNTHETICALLY-ACTIVE RADIATION (PAR) SENSING

Overview

PAR is a slightly narrower band of radiation (400 – 700 nm) than visible light, and is the area of the spectrum used by plants. The measurement of PAR profiles is undertaken to measure PAR attenuation with water depth. The euphotic zone extends to the depth where the PAR meter records 1% incident radiation.

Sources

Alberta Environment (2006 a)

At a glance

consistent light conditions

For best results, PAR should be conducted in consistent light conditions. Ensure that the sun and cloud condition of the sample day is recorded in the field sheet/book. In rough weather, take the 2.5 cm readings just below the trough of the waves. If the waterbody is exceptionally green, stained or turbid (recorded by a Secchi at less than 1 m) take extra light readings at 0.5 m intervals to aid in accurate calculation of extinction coefficients. Sensors should be rinsed with distilled/de-ionized/reverse osmosis water at regular intervals throughout the season and should be periodically sent in to the manufacture for calibration.

1 Read the manual and ensure the data logger/display has the proper sensor calibration multiplier stored for the sensor in use.
2 Ensure all connections are properly made, remove protective cap from sensor and turn instrument on.
3 Take light readings from sunny side of boat and leave sensor at each depth for at least 15 seconds or until stable.
4 Record and store readings at 2.5 cm, 10 cm and 1 m intervals to 1 m below the euphotic zone depth (1% of the 2.5 cm reading). If the initial readings drop by more than 50%, use 0.5 m intervals. Readings are in $\mu m/sec/m^2$.
5 Accurately determine the euphotic zone depth by raising the sensor to 1% of the 2.5 cm reading. Record this depth and sensor number in the lake field sheet.
6 Retrieve sensor and carefully repack in the storage case: do not kink the cable.
7 Transfer stored data to disc using a communications package.

6.12 PROTOCOL FOR SAMPLING PROTOZOA

Overview

The predominant protozoan pathogens in aquatic systems are *Cryptosporidium* and *Giardia lamblia*, and the presence of these can only be verified by the identification of *Cryptosporidium* oocysts and *Giardia* cysts. Due to the high risk of potential contamination of the sample during collection, care must be taken when collecting protozoan samples. Thus, additional procedures are followed to try and maintain sterile conditions.

Sources

Alberta Environment (2006 a), EMAN-N (2005)

At a glance

1 Set up the sampling apparatus on shore with the intake line placed into the water column midway between the surface and bottom. Hold in-place using an anchoring rod. Care must be used when choosing a site to find good flow and to avoid any backwater areas.

2 Connect the pump to the battery and open the flow valve for maximum flow. 100 L of source water are pumped to flush the system and check for leaks. The valve is shut off and the pump disconnected from the battery.

3 Place a cartridge filter aseptically into the filter holder. Tighten the filter holder and place it in the stainless steel bucket to keep it upright. Record a water meter reading and the time. Start the pump and partially open the valve. Adjust the flow rate to 4 L/minute

4 At least 100 L of water should be pumped through the filter if possible. In water that is very clear additional samples should be pumped (usually 150-200 L). In very turbid conditions pumping continues only until the filter has reached capacity and the water flow has ceased.

5 Do not allow the pressure to exceed 30 psi. During pumping, the flow rate is adjusted when necessary to try to keep the rate constant.

watch pressure

6 When pumping is complete, close the flow valve to ensure no backflow of sample, and then disconnect the pump from the battery. Record the end time and meter reading.

7 Remove the filter aseptically from the filter holder and put it into a plastic Ziploc bag. The water and any sediment from the filter holder are poured into the bag containing the filter cartridge, seal the bag and put it into a second Ziploc bag to ensure that any leakage will be captured.

8 Sampling information including site name, date, start and end times, start and end meter readings, total volume pumped, flow rate, maximum pressure, sampler initials, and site sample number should be recorded on the outside bag.

9 Place the sample into a cooler containing ice packs or hot water bottles, depending on the season. If not transported to the

laboratory the same day, keep refrigerated at 4°C until sent. A 50 – 100 mL water sample for turbidity should also be collected whenever a filter sample is taken.

cleaning sampling apparatus

10 Once sampling has been completed, flush a minimum of 100 L of warm water through the system. The sampling apparatus is attached to the Pony pump and intake line, which in turn is attached to a water tap. Neutrad soap is added at the beginning of the cleaning. The filter holder is scrubbed with a stiff brush in instances where grit was present. Once flushed out and cleaned, the equipment can be left to air-dry.

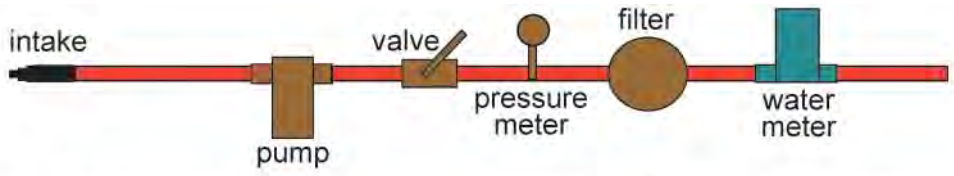


Figure 9: Assembled protozoan sampling apparatus (Alberta Environment (2006a))

6.13 PROTOCOL FOR TRACE ORGANIC CONTAMINANTS AND PESTICIDES SAMPLING

Overview

Trace organic sampling use grab or composite sampling techniques as long as consideration is given to the following points.

- Only glass, Teflon, or stainless steel that are cleaned to trace organic standards, should be in contact the sample.
- Samples should not have any headspace and should be collected in amber or dark glass bottles to limit potential photo-degradation.
- Minimize sample aeration to limit volatilization.
- Avoid using an intermediate container to fill samples bottles (a contamination concern).
- Preserve samples as required by the laboratory.
- When sampling under ice, some vials used for volatile priority pollutants (VPP) are difficult to fill. Ensure the auger hole is well flushed and lower the vials by hand as deep as possible, then cap below the surface. Alternately, a clean trace organic 1L brown bottle can be filled and VPP vials immediately poured off from the 1L brown bottle ensuring no head space.

For blanks, use ultra-pure de-ionized water (highest-grade de-ionized water used in the analysis of the trace organic parameters being sampled) supplied by the appropriate analytical laboratory section for field blanks.

Sources

Alberta Environment (2006 a), Environment Canada (2006 b), Environment Canada (1999)

At a glance

1 Do not rinse bottles (unless instructed to by the laboratory) and do not touch the inside of the lid or mouth of the bottle.

2 Pesticide and AOX sample bottles may be filled from a 4 L polycarbonate bottle (Photo 13).

3 In rivers, submerse the bottle directly in the flow facing upstream. Cap below the surface once full. When sampling from a bridge, place bottle in stainless holder with foam insert, keep cap of bottle on until bottle is inserted in place. This avoids the risk of touching the bottle mouth to the stainless holder. Lower into main flow, raise bottle up and down in the flow until full, then carefully remove the holder to bridge level and cap the bottle. When sampling under ice, place bottle in stainless steel holder with foam insert and drop quickly into the main flow below the ice. Cap below the surface when full.

4 In lakes, either for open water or under ice, use a peristaltic pump to collect a vertically integrated composite, ensuring that

Teflon tubing is used. Submit a QA/QC pump equipment blank to check for possible contamination.

Large sample extraction

1 A benefit of in-field large sample extraction is the reduced detection limits. This is due to the larger sample (20 to 40 litres). Two types of samplers are the Goulden Large Sample Extractor and the Pressure Container sample extractor.

Pressure container sample extractor

The PCSE is a liquid-liquid large sample extractor, which uses dichloromethane (DCM) to concentrate hydrophobic trace organics. It is not a flow-through extractor, and may be thought of as a larger variation of the separatory funnel extraction technique used in most laboratories. The PCSE offers certain advantages over flow-through systems including simplicity and ease of operation.

1 Water samples are collected in pre-washed 20-litre stainless steel beverage containers. The samples are filtered under nitrogen pressure through in-line stainless steel holders (142 mm GF-C or AE) into Millipore stainless steel pressure containers for solvent extraction. Alternatively, centrifugate can be extracted, making the filtering step unnecessary.

2 A known volume of recovery standards (in methanol) are added to the pressure container.

3 Samples are extracted in two stages. An initial volume of 600 mL DCM is added to the pressure container, stirred at slow speed with a stainless steel and Teflon mechanical stirrer for 15 minutes. The DCM is then allowed to settle to the bottom for 15 minutes and forced under low nitrogen pressure into a sample container. Any residual water entering the sample container is poured back into the pressure container.

extract in two stages

4 A second aliquot (300 mL) of DCM is added to the pressure container, stirred for 15 minutes, and allowed to settle for 15 minutes. The second stage extract is then combined with the first stage extract to complete the sample.

5 At this point, the pH of the sample can be adjusted and the procedure repeated to extract acid or base extractable compounds. The required time for extraction of a 20-litre PCSE sample, including cleanup, is approximately 2 hours.

Goulden large sample extractor

1 The sampler and all Teflon tubing are cleaned between surveys using organic-free cleaning protocols including detergent washing, organic-free de-ionized water rinses, acetone then hexane rinses, followed by air drying. Between samples during surveys, the sampler is rinsed with acetone, hexane, and

organic free water between sites, with all glassware openings covered with fired aluminum foil (fired aluminum foil: place aluminum foil in muffle furnace for 3-6 hours at 400°C) when not in use. If possible, surveys are designed to move from sites of lower probable contaminants to higher contaminants to reduce the possibility of cross-contamination.

2 Samples are collected in pre-cleaned 4-litre glass containers or 20-litre stainless steel beverage pressure containers (all rubber o-rings on the beverage container should be replaced with vitex o-rings). The sample is filtered before extraction to reduce dichloromethane (DCM) emulsion, which can lead to reduced extraction recovery. Filtering can be accomplished by using a Millipore 142 mm stainless steel in-line filter holder and GF-C paper under nitrogen pressure (using a beverage pressure container). The filter paper should be retained (wrap in fired aluminum foil, then in a Ziploc-type bag) for subsequent laboratory extraction. The water and sediment extracts are subsequently combined to provide a result for whole water. An alternative to filtering is to extract centrifugate in the sampler and analyze suspended sediments from the sedi-sampler.

3 An initial volume of 300 mL DCM (pesticide grade) is added to the mixing chamber, and sample water pumped into the sampler through glass and Teflon tubing at a rate of 500 mL/minute. The sample is heated by a core heater to approximately 20° C to increase extraction efficiency, and mixed by a stainless steel mechanical stirrer. A second pump adds a precise volume of recovery standards (in methanol) to the mixture throughout the extraction process. A third pump replaces DCM, which is lost due to water solubility (1.6%). The pumps and mixer should be stopped periodically during the process to ensure that the DCM level remains near the original 300 mL mark. If the DCM level varies, the makeup rate should be adjusted. The standard should be added until approximately 10 minutes before the end of the extraction process to allow time to rinse the standard container and purge the intake line with an additional volume of analytical grade methanol.

4 Following extraction, the DCM extract is decanted to 1-litre pre-cleaned amber glass containers using a Teflon separatory funnel (to reduce emulsion). Repeated rinsing of the sampler with extracted water is generally required to remove entrapped DCM, particularly from the packed Teflon column. Any solvent that reaches the third stage settling chamber is added to the extract. DCM lot numbers should be recorded and solvent blanks and method blanks (using organic free water spiked with recovery standards) should be collected at pre-planned intervals. The time required for extraction of a 40-litre sample averages approximately 2.5 hours, allowing time for extraction, sample

recovery, and cleanup.

Other sources

ISO 2008 (b), Environment Canada Undated (a), Personal Com M. Sekela, Environment Canada (2009)

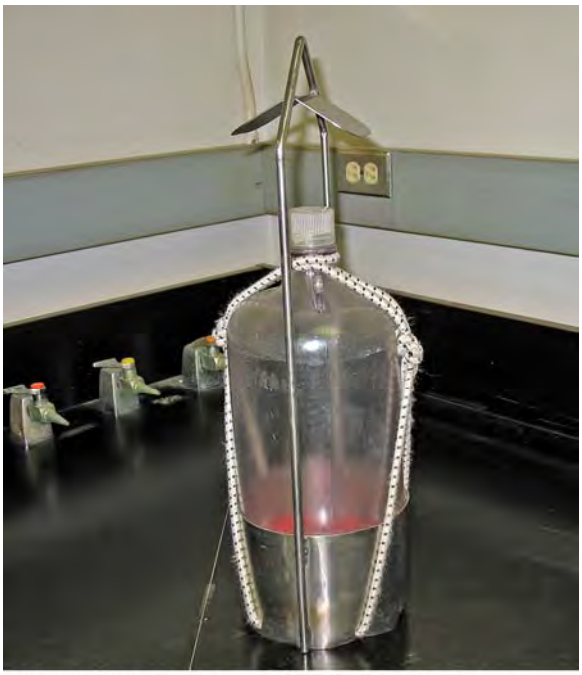


Photo 13: Example of a 4-litre sampler (Courtesy: Darcy McDonald, Alberta Environment)

6.14 PROTOCOL FOR RADIONUCLIDES SAMPLING

Overview

Radionuclides are usually tested in drinking water systems; however, there are occasions when surface water samples are tested. The origins of radionuclides can be either natural or human-based. Natural radionuclides such as uranium 238, thorium 232, potassium 40, lead 210 and radium 226 may be found in water that is in contact with bedrock and soils. Radon may also be present. Radionuclides from human activities include uranium 235, hydrogen 3 or tritium, cesium 137, strontium 90, antimony 125, lead 210, and plutonium 244. These radionuclides can be released into the environment by mining, bomb tests, crashed satellites, and nuclear power plant disasters, such as the Chernobyl disaster in the Ukraine in 1986.

Sources

EMAN-N (2005)

At a glance

1 Any quantitative analysis for radionuclides will require obtaining a discrete sample. Bottle types and any required preservatives should be determined from discussions with the laboratory that will do the analyses.

2 If low concentrations are expected, large volumes of water can be collected using large sample extractor techniques in a manner similar to that outlined for collection of trace organics.

7.0 PROTOCOLS FOR SEDIMENT MONITORING

7.1 PROTOCOL FOR SEDIMENT MONITORING FOR NUTRIENTS, METALS AND PHYSICAL CHARACTERISTICS

Overview

Sediments can be collected using either a grab or core sampler. Core samplers are tube-like devices that penetrate the sediment by gravity (free-fall), vibration, hydraulic pressure (water or oil) or by hand (scuba divers). Sediment cores are taken to determine recent and/or historical sediment physicochemical conditions in depositional aquatic environments. The best time to collect bottom sediments from flowing water bodies is during ice-free low flow periods when depositional zones can be easily identified and sampled.

Sources

Alberta Environment (2006 a), Environment Canada (1999), Newfoundland and Labrador Environment and Conservation (1999)

At a glance

Core sampling

This procedure is specific to gravity corers that are released at the water surface, allowed to free fall and penetrate the sediment under the samplers own weight. A typical gravity core sampler is a length of cylindrical pipe with a weighted head. A liner that is usually made of plastic is inserted to hold the sample. The type of liner appropriate for sampling depends on the sediment variables to be analyzed. At the bottom end of the sampler is a metal core cutter that facilitates sediment penetration (nose piece), and a core catcher to retain the sediment in the liner. At the top end of the sampler is a ball-valve or piston that retains sediment in the liner when the sampler is retrieved from the sediment.

typical gravity core sampler

1. Place a clean liner in the corer or each of the four barrels of the corer, depending on the type of corer being used. Push the liner in until the o-ring fits snugly. The liner should protrude 2 to 5 cm at the bottom.
2. Set the stoppers in the open position.
3. Lower the corer over the side of the boat (ensure that the rope is securely attached to the corer and the boat). Lower the corer slowly to minimize the creation of shock waves at the front of the sampler that may disturb and re-suspend fine sediments. Let the corer slowly sink straight into the sediment.
4. Release the messenger.
5. Raise the corer after the messenger releases the stoppers. Just before the bottom of the corer breaks the water surface, have a second person reach under and quickly cap the cores with the insert liners. Raise the unit into the boat, keeping it in the upright

position.

6 Remove each liner from the bottom of the corer. Be careful not to spill any of the enclosed water and then cap the top of each core tube and place in holder.

7 Taking one core at a time, remove the bottom cap and quickly replace it with the core extruder. Keep constant pressure on the top cap when doing this to help form a vacuum.

8 Core samples are acceptable if the core was inserted vertically into the sediment, adequate depth was sampled, and there was no sediment loss.

record information

9 Photographs, field notes, and measurements should be recorded during sediment core collection. The core should be photographed twice with a digital camera; once in ambient light and once using a fill-in flash. The core sample should occupy a minimum of 70% of the image and a label and a scale (ruler) should be included in the view. Additional photographs should be taken if any anomalies or artifacts are encountered.

10 Record the total core depth, vertical profile/structure (i.e., depth and description of distinct layers), type of material (soil type, colour, moisture condition, density, and grain size), biological structure (e.g. shells, large tubes, biota, macrophytes), debris (e.g., wood chips, plant or other fibres), obvious signs of anoxia (e.g., black layers), degree of sample disturbance, obvious odour or oily sheen, and any other unusual properties.

11 Record target and actual sampling location (GPS), date and time of sample collection, overlying water depth (m), ambient weather conditions, core penetration depth, sampling personnel, and any deviations from the field sampling procedure.

cutting core into sections

12 To cut the core into sections, remove the top cap from the tube and siphon off excess water. Carefully push the sediment core to the top of the core tube, expelling any remaining excess water. Set the core slicer on the top of the sediment tube. Push the sediment into the core slicer and cut off the required amount of sample, usually the upper 4-6 cm (can be 2 to 10 cm of the upper layer). Place the sample in a labeled sample container. Place each sample container in two Ziploc-type plastic bags (double-bag) in case of leakage.

13 Rinse the tubes and corer with lake water before collecting new samples or decontaminate the equipment between sites.

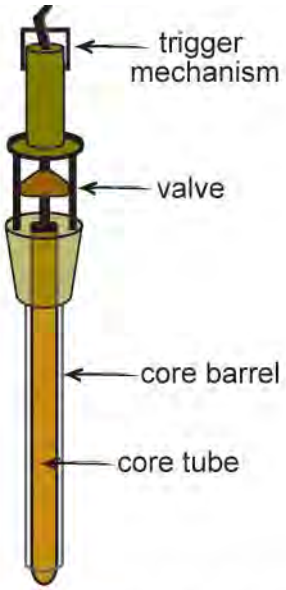


Figure 10. Kajak-Brinkhurst core sampler
(British Columbia MWLAP (2003))

Sediment grab sampling

This procedure is specifically used to collect surficial sediment samples and is conducted when the quality of recently deposited sediments is of interest and relatively large volumes of sediment is required. Grab samples can be easily taken in depositional shallow sediments or in relatively coarse sediments, where core samples cannot be obtained. Each device consists of a set of mechanical jaws, which shut when lowered into the sediment. The three commonly used samplers are Ekman (used for soft fine-grained sediments), Peterson (used for hard bottom material) and Ponar (used for fine-grained to more coarse sediments) grab samplers.

1 Label the sample containers with site identification, sample type, sampling method, sampler ID, and the date of collection. Record the following site/sampling information in the field sheet/book during the sampling process: target and actual sampling location (GPS, date and time of sample collection, overlying water depth (m); weather conditions, sampling personnel, macrophyte growth and any deviations from the field sampling procedure.

2 Ensure that the dredge jaws open and close properly.

3 Lock the dredge jaws in the open position and lower in a controlled fashion to the lake/river bottom. Do not allow the sampler to “free fall”. The sampler should be in contact with the substrate or positioned just above it.

4 Drop the messenger (if applicable) and slowly raise the

sampler off the bottom to prevent loss of fine sediment and then raise the dredge to the water surface.

5 The sample is deemed acceptable if the desired depth of penetration has been achieved; and the sampler has completely closed and was not inserted on an angle or tilted upon retrieval. If the sample does not meet these criteria the sample should be taken again close to the original sampling location. The rejected sample should be discarded in such a way that it will not affect subsequent sampling efforts. The actual achievable penetration depth depends on the nature of the sediment and the sampling device used. A minimum penetration depth of 6 to 8 cm is recommended for surficial sediment samples but the preferred depth is 10 to 15 cm. These depths ensure minimal disturbance to the upper 2 to 5 cm of sediment that will be removed from the grab sample and submitted for physicochemical analysis.

6 Record the following sediment measurements/observations (where applicable): grab penetration depth, depth sub-sampled, type of material (sediment type, colour, moisture condition, density, and grain size), biological structure (e.g. shells, large tubes, biota, macrophytes), debris (e.g., wood chips, plant or other fibres, obvious signs of anoxia (e.g., black layers), degree of sample disturbance, obvious odour or oily sheen, and other unusual properties.

7 Siphon off any water on the surface of the grab sample with a syringe, if the water is cloudy allow it to settle first (use a new syringe for every site). Remove the upper 2 to 5 cm of sediment (according to study design) with a stainless steel or Teflon implement and transfer to a stainless steel/plastic tray/bowl. Avoid sediment at the edges of the grab sample (touching the grab sampler).

8 If more sediment is needed to obtain the necessary volume for analysis, continue collecting grab samples from the same site in undisturbed sediment. The composite sample tray/bowl should be covered while grab samples are being collected. The number of grab samples collected to form a composite sample should be noted.

preparing the sample

9 Wash the dredge off in the site water. Rinse bucket and ladles before and after each site in the water body.

10 Once sufficient sediment is collected, stir (homogenize) the composite sample for 30 seconds, then transfer into the appropriate pre-labeled containers with a stainless steel or Teflon implement.

Other sources

B. C. WLAP (2003), Environment Canada 2006 (a)



Photo 14. Transferring sediment samples to containers
(Courtesy: Darcy McDonald Alberta Environment)

7.2 PROTOCOL FOR AIRLIFT SEDIMENT MONITORING

Overview

This procedure is used to sample sediments present in deep, moderately slow rivers.

Sources

Alberta Environment (2006 a)

Special safety concerns

use caution with compressed air

Be careful with storage and handling of the compressed air gas tanks. They are highly pressurized and the valve, if damaged, can cause the tank to turn into a projectile. When transporting the tanks by truck or boat, immobilize them in an upright position. Pressurized tanks cannot be transported by helicopter.

At a glance

1. Remove the protective cap from one tank just before setting up.
2. Carefully attach the regulator to the tank and be careful not to over tighten as the brass threads will easily strip.
3. Attach hoses and the air lift sampler to the tank.
4. With the regulator closed, carefully open the main tank valve fully and then turn the valve back one full turn.
5. Slowly open the regulator until the pressure in the second stage reaches 20-45 psi (140 to 310 kPa).
6. Place the inlet of the sampler on the substrate to create a good seal by moving it around until it feels stable and set into the substrate.
7. Deliver short pulses of compressed gas to the sampler.
8. Collect the thickest slurry in clean buckets (pre-filter it through an 80 μm mesh held under the sampler outlet to limit particle size).
9. Collect five to six buckets in total and move the sampler frequently.
10. Clearly label the site on the buckets and ensure that their lids are tightly sealed.
11. When finished sampling turn off the main valve on the tank, bleed pressure out of the line and unhook the hoses. Carefully remove the regulator and replace the protective cap on the tank.
12. Record number and size of buckets collected, exact sampling location, flow conditions, turbidity of the river, amount and a description of the sediment, abundance of attached algae and macrophytes, as well as date and time.
13. Upon return to the laboratory, let the buckets containing the sediment stand for 20 to 24 hours.
14. Siphon off the supernatant, saving this in clean jar(s) as it may be analyzed for the same parameters as the sediment.
15. Put the remaining sediment in clean glass jars.
16. Let the jars sit for 24 hours in a refrigerator. Then remove the supernatant from the top of the jar and save with the previously collected supernatant.

17 Collect a minimum of one 500 mL jar of sediment.
18 Clearly label the jar with site and date.
19 Freeze the sample.



Photo 15. Air lift sampler (Courtesy: Darcy McDonald, Alberta Environment and from Alberta Environment (2006))

7.3 PROTOCOL FOR SAMPLING SUSPENDED SEDIMENTS

Overview

Suspended sediments should not be construed as being suspended solids samples since the former are measured usually by taking a set volume from one depth/location and passing the volume through a filter to obtain a weight of solids. In contrast, suspended sediments are collected using samplers that allow the sediment and water to enter the sampler at the same velocity as the stream water. The US Geological Survey (USGS) has designed numerous types of samplers for different applications. The reader is advised to review USGS (2005) to select the sampler appropriate for the conditions that may be encountered.

Sources

Federal Interagency Sedimentation Project (1965), Environment Canada (1999)

At a glance

Manual collection

1 Use a clean bottle for each separate sediment sample.

2 Use one suspended sediment sample for each vertical point selected in a stream cross-section.

3 Orient the intake nozzle upstream directly into the current.

4 Hold in a horizontal position while the sediment sampler is lowered into the stream.

5 Avoid submerged obstructions immediately upstream.

6 Lower the sampler at a uniform rate from the water surface to the bottom of the stream, then immediately reverse and raise it to the water surface at a uniform but not necessarily equal rate to that used to lower the sampler.

7 Immediately remove the bottle, cap it, and mark details on it: sample site, date and time of collection, location in cross section, and total depth at sample location.

8 Discard the sample if the bottle becomes entirely full.

9 Determine from the laboratory the actual volume sample requirements as this may involve more than one composite sample to be collected from each location.

Centrifuge collection

1 Ensure that the centrifuge top assembly is constructed of stainless steel (solvent washable) if collection of both suspended sediment and centrifugate is planned. Use a standard cast iron top assembly if centrifugate collection is not anticipated.

prior to initial setup

2 Prior to initial setup, wash the centrifuge bowl(s), internal discs, and hold-down nut(s) with soap and water, rinse again with water, then follow with a final rinse with de-ionized water. Rinse the bowl, hold-down nut, T-wrench, top assembly, and intake lines with acetone, then hexane. Install the solid disc (i.e. the one with no holes) on the bottom of the disc pile. Wrap

these parts in fired aluminum foil for transfer to the sampling location (to fire aluminum foil, remove foil from the cardboard roll, place in muffle furnace at 400° C for 3-6 hours).

3 Install the centrifuge bowl on the centrifuge spindle, screw in the two bowl stops and tighten the cast retaining ring using the large bowl ring and the rubber hammer (counter-clockwise to tighten) once at the sampling location. Tighten the retaining ring until the marks on the ring and bowl match. Tighten the upper ring holding the light top flange hand-tight. Use clean disposable polyethylene gloves while handling the centrifuge bowl. Unscrew the bowl stops after the bowl flanges have been attached and ensure that the brake is not engaged by testing that the bowl spins freely. Replace the top assembly and screw down the assembly stops.

4 Attach the sheathed Teflon intake line to the submersible pump, and secure the pump in the position and location desired (position the intake facing upstream). Pump water through the lines for approximately two minutes prior to attaching to the centrifuge top assembly.

5 Start the centrifuge with the submersible pump off. Once operational speed has been reached (1-2 minutes), re-start the submersible pump, and adjust the intake valve on the top of the centrifuge for a flow of 4 litres/minute. Use the graduated cylinder and a stopwatch to measure the flow. Check the flow rate a number of times during the initial 15 minutes of operation, and then approximately hourly thereafter. Record the time that sample collection started, the flow rate, and any other pertinent variables in a field notebook.

start centrifuge before pump

6 Use Teflon tubing, preferably flex-tubing, to attach to the centrifuge outlet if centrifugate is to be collected. The generator (at least 3500 watt, preferably 5000 watt) should be situated as far from the centrifuge as practical (and downwind) to reduce the chance of sample contamination from generator exhaust.

7 Collect samples of raw sample water and centrifugate periodically to check on centrifuge recovery efficiency and to allow subsequent calculation of sediment and contaminant loading.

8 At shutdown, first stop the submersible pump (noting the time in the field notebook) and then shut down the centrifuge. Allow the centrifuge bowl to come to a complete stop before opening the top assembly. The bowl break should only be used once the bowl has nearly come to a stop.

9 Screw in the two bowl stops, and loosen the large cast flange (clockwise to loosen). Loosen the bowl stops and remove the bowl from the spindle. Pour out (gently and slowly) any residual water in the bowl. Cover the bowl opening with fired aluminum foil until the sample is removed.

10 Use solvent-washed stainless steel spatulas and/or knives to

transfer sediment from the centrifuge bowl to pre-cleaned, tare weight determined and pre-labeled sample containers of the appropriate type. Once the sample has been transferred, weigh and calculate sample wet weight. Record the wet weight on the sample container and in the field notebook.

11 Wash and rinse the centrifuge bowl as soon as possible before sediments have a chance to dry on the bowl and discs, which makes the task much more difficult.



Photo 16. Manual suspended sediment sampler on sampling rod

7.4 PROTOCOL FOR SEDIMENT OXYGEN DEMAND MONITORING

Overview

Sediment oxygen demand (SOD) is a measure of the oxygen consumed by biochemical decomposition of organic matter in stream or lake deposits. SOD over a defined time period can be measured in-situ using a chamber method, or sediment cores can be taken for subsequent incubation and SOD measurement in a controlled environment.

Sources

Alberta Environment (2006 a)

At a glance

This method refers to the measurement of SOD using an *in-situ* chamber. However, it should be noted that this may not be applicable to all sites because of issues such as vandalism or accessibility.

Filling the chambers

1 Choose representative substratum for the site. Substratum composition ideally should be cobble and gravel interspersed with fines. Substrate should not be so large as to not fit inside the chamber. Chambers should be placed in areas of flowing water. Ideal working depth (from ice surface to substrate) is between 50-70 cm, but no greater than 90 cm. Ensure that sufficient distance between bottom of ice and top of velocity vanes exists to allow vanes to spin freely.

2 Check that each chamber has all stoppers attached to the lid (use light-duty chain and epoxy cement) and that rubber and foam gaskets are secured and in good condition on the chamber. Foam gaskets on ALL chambers should be completely changed before undertaking any new work.

3 Ensure that the lid fits snugly on the chamber (each chamber has the same exclusive number for the lid and base) and that the snap-down clips operate correctly.

4 Check that the water vanes rotate freely and the Teflon washers are in good condition

5 A total of four chambers will be filled with substratum; and one “control” chamber to be filled with river water.

6 Choose representative substratum for the sites to be used in the study area.

7 Fill chambers with ambient water to about ¼ of its depth. Fill ¼ of the chamber with finer material such as gravel and sand to form a base on which the larger cobble can rest on.

8 Using a shovel, carefully remove undisturbed cobble and gravel from the substrate and place atop the sand/gravel base in the chamber. Arrange rocks (epilithic cover must face up) such that they are representative of substratum conditions at the sample site.

9 Equal amounts and type of substratum should be placed in

each chamber. Compare with other chambers.

10 The chambers are usually filled between 1/3 and 1/2 of the chamber depth to leave room for the water vane unit on the inside of the chamber.

11 Place the chamber, without the lid, very carefully into the water and allow it to fill very gradually to reduce disturbance to the substratum in the chamber.

12 Position the chamber on the stream bottom in a level fashion.

13 Leave the chamber in position until the sediment in the chamber has settled or flushed. This is important since the suspended material in the water column may increase oxygen demand in the chamber.

Closing the chambers

1 Ensure that the rubber and foam gaskets and the water sample tube are free from ice or sediment.

2 Remove the stoppers from the portholes in the lid and place the lid gently onto the chamber making sure that no bubbles are trapped between the flange and the lid.

3 In deeper depths, another chamber (that has been turned over onto the substrate) can be used as a platform to elevate the chamber to a suitable working depth.

4 Check that the foam gasket on the lid is snugly fitted onto the chamber base.

5 Ensure that the four snap-down clips on the chamber lid have been extended equally (clockwise to tighten, counter-clockwise to loosen) for easier clamping and to prevent warping of the lid.

diagonally opposite clips

6 It is very IMPORTANT to close two diagonally opposite clips on the lid simultaneously, and repeat with remaining clips. It may be necessary to adjust the clips so that they snap down briskly onto the base, giving a secure fit.

time of lid closure

7 Making sure that the chain is not wrapped around the base of the vane, replace the stoppers securely in the portholes. Having some slack in the chain will allow for some give if the chain is struck by ice or debris. IMPORTANT: Record time of lid closure for each chamber to the nearest minute on field sheet.

8 Depending on river velocity and site location, it may be necessary to anchor the chambers. This can be accomplished by using rope secured to one or more t-posts pounded into the ice surface (in winter conditions) and tied to the chamber handles.

9 In higher velocity locations, rocks may be piled up against the base of the chambers for extra stability.

10 Measure river ambient DO concentrations.

Obtaining the sample

1 Take note of any unusual conditions: stopper not in porthole, retaining clip open, vane performance (spin or no spin), chamber tipped over, etc., and record on SOD field sheet.

2 Rotate water vane of all the chambers very slowly to achieve complete mixing of water.

3 Remove from river and record chamber number, date, and time.

4 Open the smallest stopper, gently rotating the vane, place Tygon tubing over the water sample tube and carefully siphon water into the Winkler bottle. Note: Sample should be discarded if air bubble or ice is present in Winkler bottle. Replace Tygon tubing if freezing occurs.

5 Preserve with Winkler chemicals.

6 After water samples for DO measurement have been taken, remove lid of the chamber.

calculating chamber volume

7 In order to measure the volume of the chamber, place the depth-profile measuring device over the opening of the chamber and secure using the 3 alignment pins. Place the depth-profile measuring rod (pre-marked in 0.5 cm increments) through one of the holes in the Plexiglas plates until the rod touches the substratum. Record the depth as indicated on the rod and subtract 0.5 cm (width of the Plexiglas as it sits above the chamber flange) from the total. This measurement will give the distance from the top of the rock to the underside of the Plexiglas. Record on field sheet.

8 Record dissolved oxygen of the water within the chamber.



Photo 17. SOD chamber
(Alberta Environment (2006a))

8.0 PROTOCOLS FOR SAMPLING FISH

8.1 PREVENTION OF SPREAD OF AQUATIC INVASIVE SPECIES

Overview

Ensure specific protocols are followed to prevent the spread of aquatic invasive species when sampling for fish. Ensure specific nets and gear are used for each water body, the following cleaning protocols should be used after retrieving or before setting nets and related gear into a new water body.

Sources

Manitoba Water Stewardship (2010)

At a glance

1 Clean and inspect all nets and gear by removing all plants, animals and mud at the source.

2 Rinse nets and gear using high pressure, extremely hot tap water – preferably 50°C (120°F), or dry nets and gear for at least 5 days in the hot sun (if rinsing is not available).

3 Alternatively, freeze all nets and gear for two or more days, or soak nets and all equipment in a 1) table salt water solution (230 g (2/3 cup) of salt to 1 L (1 gallon) water) for 24 hours or 2) undiluted white vinegar for 20 minutes, or 3) diluted household bleach solution (> 5% sodium hyporchlorite at a concentration of 100 ml (~3 ounces) of bleach to 20 L (~5 gallons) of water) for 60 minutes.

8.2 PROTOCOLS FOR FISH COLLECTION AND PROCESSING TISSUES

Overview

The fish collecting and processing protocols outlined here are designed primarily for the purpose of analyzing tissues for levels of bio-accumulated substances. Since fish are high on the aquatic food chain, analyses of their tissues may provide valuable toxicological information about substances that are difficult to measure in ambient waters (such as mercury). The various collection techniques discussed here are partially selective in terms of the species and size classes. Therefore, the particular method to be used will depend on the purpose of the study and should be outlined in the project design.

Sources

British Columbia MWLAP (2003), Ministère de l'Environnement, Gouvernement du Québec. (2004), Newfoundland and Labrador Environment and Conservation (1999)

At a glance

1 Always record date and time of each net set. It is recommended that depth and bottom type be recorded as well.

2 **For collecting fish samples, permits are necessary from the appropriate agencies**.

3 For each species captured at a given site, the object should be to obtain a certain number of specimens (e.g., five for each of small, medium and large). The study design will indicate whether whole fish, muscle tissue, with and without skin, or organs should be collected.

8.3 PROTOCOL FOR SAMPLING FISH WITH GILL NETS

Overview

Gill nets are constructed of fine monofilament line suspended between a buoyant 'float line' and a non-buoyant 'lead line'. Nets may be all one mesh size or may be composed of different mesh sizes by joining a series of panels. Panels are generally 15 metres long. The mesh size of a panel is measured by pulling two opposing knots of a mesh-hole tight and measuring the distance. Mesh sizes generally range from 2.5 to 12.5 cm. The size of the mesh chosen will determine the size of the fish that will be caught. The ends of the net are equipped with a bridle, tether lines, anchors and buoys. Gill nets can either be set with an anchoring point on shore or with both ends anchored in open water. There are two types of gill nets, floating gill net - positive buoyancy for capturing surface-dwelling species, and sinking gill net - negative buoyancy for capturing bottom-dwelling species.

Sources

British Columbia MWLAP (2003), Ministère de l'Environnement, Gouvernement du Québec. (2004), Newfoundland and Labrador Environment and Conservation (1999)

At a glance

net location

1 Select a location where there is both an ideal shore line anchoring point (e.g., a tree, a large rock, a dock etc.) and suitable near shore depth (so the net will not bunch on the bottom). Avoid setting the net near obstacles such as sunken stumps or logs that can entangle and rip nets.

2 Tie one end of the net to the shore anchor point with a tether line. Load the remainder of the net neatly into the boat.

3 One person then slowly rows in the direction that the net is intended to be set while the other person gently feeds the net out. (Hint: If the boat has protuberances, rivets, or sharp edges that will snag the net during deployment, it is advisable to cover

these with a sheet of poly film.)

4 Once the net is at full extension, the anchor is lowered and the buoy deployed. Attach labeled buoys to the float line at intervals of about 5 meters to warn boaters. Do not set a net near a swimming beach during swimming season, or leave a net unattended near boating lanes. Note: Ensure that the buoy is well flagged.

be aware of boaters, swimmers, boating lanes

5 While kneeling, grab the float line and pull the boat along the net to check for fish (if the boat is equipped with a motor, raise it to avoid entanglement with the net). Collect any fish encountered. If enough fish have been caught, reverse your path and retrieve the net. (Hint: If there is any wind, it is advisable to retrieve the net against the wind to prevent the boat from drifting over and entangling the net.) When retrieving the net there is the option of hauling the net in and then removing the catch or, removing the catch first. Removing the fish before the net is in the boat poses fewer entanglement problems.

retrieving net and removing fish

6 Place captured fish in an ice-filled cooler. Label cooler for the site if there is more than one capture site.

7 Return to shore and process the fish.

Protocol for gill net – open water

1 Load the net neatly in the bow of the boat and proceed to the deployment site (established in the project design). Avoid sunken stumps or logs that can entangle and rip nets.

2 Anchor one end of the net securely. The person in the bow is responsible for deploying the net while the person in the stern controls the boat (reverse in the direction the net is to be set). (Hint: try to set the net with the wind to prevent the boat from drifting over and entangling the net. Alternatively, you may set against the wind in reverse while under power.)

3 Gently feed the net out and set the other anchor when the float line is taut. Attach labeled buoys to the float line at intervals of about 5 meters to warn boaters. Do not set a net near a swimming beach during swimming season, or leave a net unattended near boating lanes. Note: Both buoys should be well flagged and labeled.

be aware of boaters, swimmers, boating lanes

4 While kneeling, grab the float line and pull the boat along the net to check for fish (if the boat is equipped with a motor, raise it to avoid entanglement with the net). Collect any fish encountered. If enough fish have been caught, reverse your path and retrieve the net. If there is any wind, it is advisable to retrieve the net against the wind to prevent the boat from drifting over and entangling the net. When retrieving the net (after having been set for an appropriate period of time), there is the option of hauling the net in and then removing the catch or removing the catch first. Removing the fish before the net is in the boat poses fewer entanglement problems.

retrieving net and removing fish

5 Place captured fish in an ice-filled cooler. Label cooler for

the site if there is more than one capture site.

6 Return to shore and process the fish.

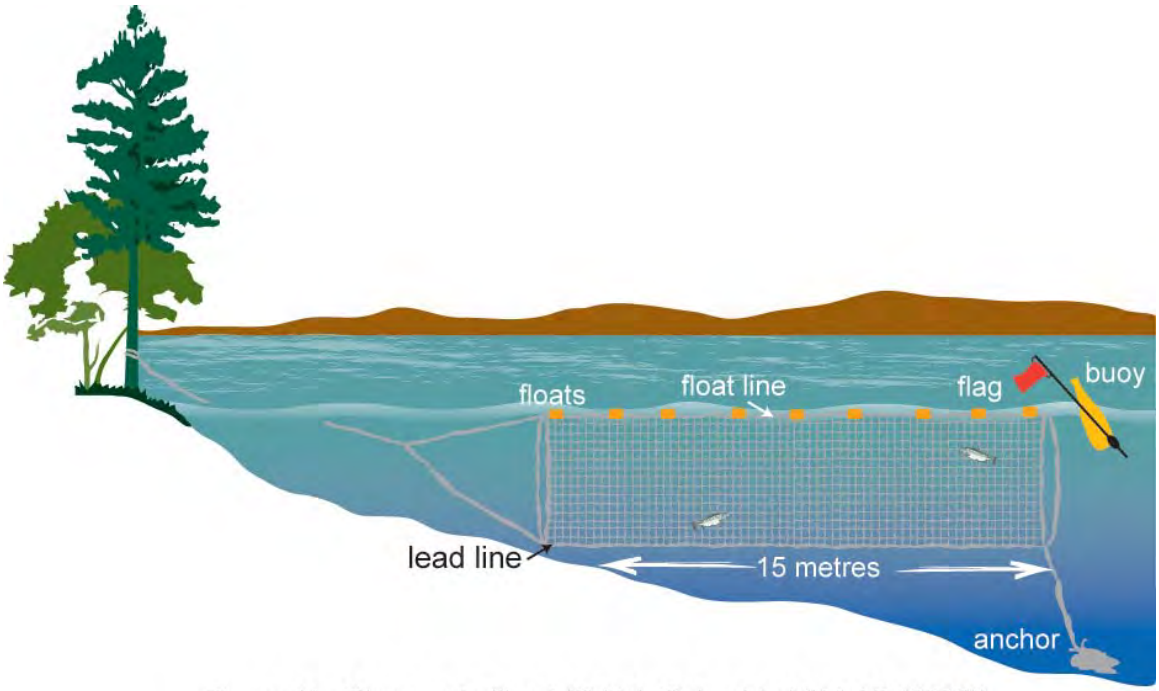


Figure 11. Shore-set gill net (British Columbia MWLAP (2003))

8.4 PROTOCOL FOR SAMPLING FISH WTH BEACH SEINES

Overview

A seine is a panel of netting pulled by bridles at each end. For many smaller seines, the bridle is attached to pulling poles or 'brails'. The upper line of the seine is equipped with floats and the lower with weights. Beach seines are effective only over shorelines and river bottoms that are free of obstacles such as logs, stumps, or large boulders.

Sources

British Columbia MWLAP (2003)

At a glance

1 For **small seines where wading is employed**, one person holds a brail securely against the bottom in ankle deep water while the second person wades directly out with the other brail. The first person remains stationary while the second pulls the seine to full extension and sweeps around pulling the net back in toward shore (all the while ensuring that the weighted line remains against the bottom). Both people then pull the net up on shore where the fish are collected and processed.

2 For large seines where the beach seine is deployed from a boat, attach a length of rope to each bridle (the length will be the distance off shore from which the seine net will be pulled).

3 Tie an anchor to one of the ropes and brace the anchor on shore. Load the net into the bow of the boat.

4 The operator of the boat then reverses slowly directly away from shore while the person in the bow feeds the rope out. Once the end of the rope is reached, the boat operator turns 90° and proceeds (in reverse) parallel to the beach while the person in the bow of the boat feeds out the net.

5 Once the end of the net is reached, the boat operator turns back towards shore while the person in the bow feeds out the rope. The net is retrieved by pulling from both ends at the same rate (this ensures that the net is not pulled in at an oblique angle).

retrieving the net

6 When the net is about 10 m from the beach, the two people then approach one another as they continue to haul it up on the beach where the fish are collected and processed.

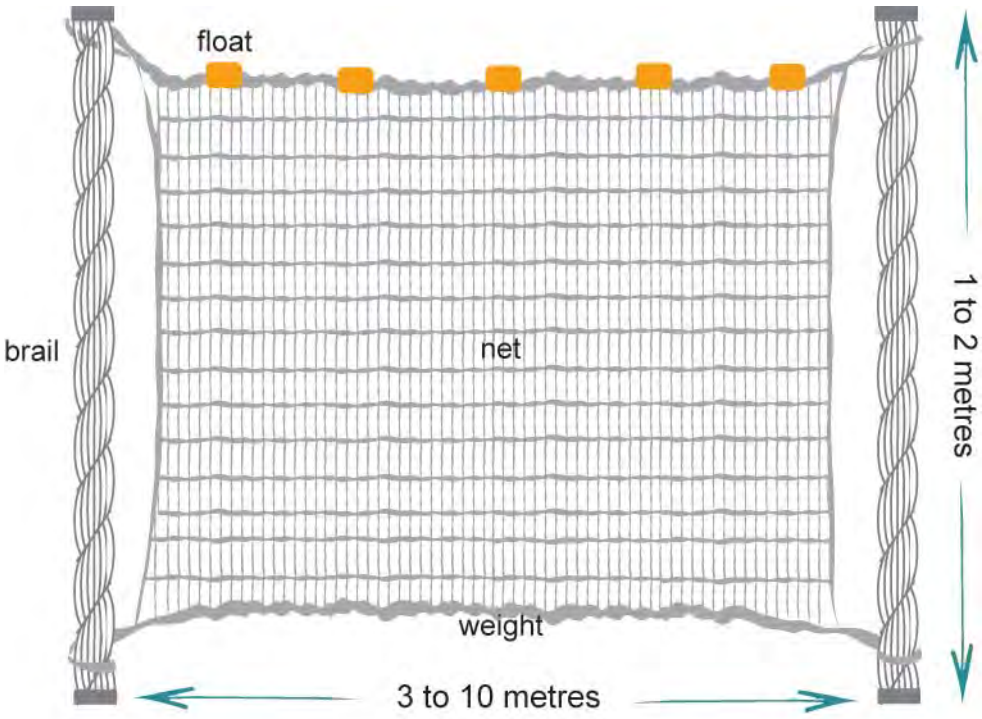


Figure 12. Seine net (British Columbia MWLAP (2003)).

8.5 PROTOCOL FOR SAMPLING FISH WITH SET LINES

Overview

A set line is a heavy line anchored at each end (one anchor having the flag line). It has regularly spaced leaders with hooks. Setlines can be used in situations where the use of nets is not suitable, for example very deep or fast flowing waters. Bait each hook and load the line carefully into the bow of the boat. Carefully lower the end of the line (anchor without a buoy or marker line).

Sources

British Columbia MWLAP (2003)

At a glance

1 The boat operator then slowly reverses in the direction the line is to be set while the person in the bow carefully feeds out the line **(use extreme caution with the hooks)**. **Never wrap a line around your wrist, arm, or leg due to danger of the line snagging.**

2 Once the end of the line is reached (the other anchor is encountered), the anchor is lowered using the flag (buoy) line and the boat operator reverses slowly to ensure that the line is taut.

3 To retrieve the line, haul up the flag line until the first hook is reached and then slowly move in the direction that the line is set as the remaining hooks are hauled into the boat.

4 Return to shore and process the fish.

8.6 PROTOCOL FOR ELECTRO-FISHING SAMPLING

Overview

Electro-fishing is potentially dangerous; consequently, all staff undertaking such work should be certified before using this technique. Electro-fishing is an ideal tool in smaller streams where the bottom is uneven or where there are obstructions that make conventional collecting techniques difficult. It can be used either to stun the fish so that they can be collected with a dip net, or to scare the fish ahead of the electrical field into a net (seine) that spans the width of the stream.

Sources

British Columbia MWLAP (2003)

Special safety concerns

certification needed

All members of the sampling team must be certified through an Electro-fishing Course.

At a glance

1. Follow the manufacturer's directions for storage, transport, operation, and maintenance of the specific shocking device available to you.
2. Set a net the width of the creek downstream from where you begin electro-fishing.
3. Work toward the net until a sufficient number of fish have been trapped.
4. Collect and process as per *Protocol for processing fish tissues*. If the fish are too small to process in the field, they may have to be submitted as whole specimens (outlined in the project design).
5. Note effort required to collect fish (as an index of catch per unit effort) and the instrument settings for the stream conditions.
6. For the recorded notes, approximate fishing area (i.e., length and width of stream).
7. The day's sampling schedule must be planned to ensure that the samples arrive well before the end of business hours so they can be shipped the same day. Since some variables have very limited hold times, every effort must be made to avoid delays in shipping.

be aware of hold times

8.7 PROTOCOL FOR FISH COLLECTION WITH A FYKE NET

Overview

This protocol indicates how a Fyke net is set.

Sources

Newfoundland and Labrador Environment and Conservation (1999)

At a glance

Fyke nets consist of an internal cone that directs fish into a trap box. Wings and leaders can be used to direct fish into the box.

avoid obstacles when setting net

1 Select a location where there is both an ideal shore line anchoring point (e.g., a tree, a large rock, a dock, etc.) and suitable near shore depth (so the net will not bunch on the bottom). Avoid setting the net near obstacles such as sunken stumps or logs that can entangle and rip nets.

2 Tie an anchor to one of the ropes and brace the anchor on shore.

3 Attach labeled buoys to the float line to warn boaters. Do not set a net near a swimming beach during swimming season, or leave a net unattended near boating lanes. Note: Ensure that the buoy is well flagged.

4 When retrieving the net (after having been set for an appropriate period of time), there is the option of hauling the net in and then removing the catch or removing the catch first. Removing the fish before the net is in the boat poses fewer entanglement problems.

5 Place captured fish in an ice-filled cooler. Label cooler for the site if there is more than one capture site.

8.8 PROTOCOL FOR MINNOW TRAPS

Overview

This protocol indicates steps to be undertaken to collect fish using a minnow trap.

Sources

Newfoundland and Labrador Environment and Conservation (1999)

At a glance

trap live fish

Minnow traps are net or wire enclosures used to trap live fish. The fish swim through a large funnel-shaped opening near the outside of the trap to the narrower opening close to the centre of the trap. Once inside, it is difficult for the fish to locate the opening and escape.

1. Select a location where there is both an ideal shore line anchoring point (e.g., a tree, a large rock, a dock, etc.) and suitable near shore depth (so the net will not bunch on the bottom). Avoid setting the trap near obstacles such as sunken stumps or logs that can entangle and rip traps.
2. Tie an anchor to one of the ropes and brace the anchor on shore.
3. Attach labeled buoys to the minnow trap to warn boaters. Do not set a trap near a swimming beach during swimming season or leave a trap unattended near boating lanes. Note: Ensure that the buoy is well flagged.
4. When retrieving the net (after having been set for an appropriate period of time), there is the option of hauling the net in and then removing the catch or removing the catch first. Removing the fish before the net is in the boat poses fewer entanglement problems.
5. Place captured fish in an ice-filled cooler. Label cooler for the site if there is more than one capture site.

8.9 PROTOCOL FOR PROCESSING FISH TISSUES

Overview

This protocol indicates steps to be undertaken to prepare fish tissue samples for metals or trace organic analyses.

Sources

British Columbia MWLAP (2003)

At a glance

Trace metal analyses

1 Each specimen should be identified, weighed, measured, and scale samples taken for aging before dissection. Gender should be determined after dissection, and maturity should be commented on if possible (i.e., degree of egg or sperm development).

2 Wipe specimen clean of mucous and foreign matter with a 4% nitric acid/de-ionized water solution prior to dissection. Dissect specimens on a cleaned glass or plastic surface only.

3 When removing a block of tissue from the specimen, the cutting instrument (plastic or stainless steel knife) should be wiped clean after each incision using a paper towel soaked with de-ionized water. Use a new paper towel for each specimen dissected. The preferred location on the fish for a sample of muscle tissue is the upper part of the side behind the dorsal fin. Care should be taken not to cut into the digestive tract during dissection. If the target fish are small, composite tissue samples may be required (this will be identified in the project design).

preferred muscle tissue sample location

4 Remove a minimum of 100 g of muscle tissue and place in a pre-labeled tissue cup (acid washed, leak-proof plastic containers available from the issuing laboratory). Remove the liver and place in a pre-labeled tissue cup. Muscle tissue samples should be free of skin and bones. Liver samples must exclude the gall bladder.

5 Immediately place each tissue cup in a cooler containing ice packs.

7 Wipe the glass or plastic dissecting board clean with the 4% nitric acid/de-ionized water solution before proceeding to the next specimen. The acid should be certified pure and a QC check conducted of the working solution for contamination. An alternative is to use solvent washed aluminum foil as a disposable clean surface (replace after each specimen).

Trace organic analyses

1 Each specimen should be identified, weighed, measured, and scale samples taken for aging before dissection. Gender should be determined after dissection, and maturity should be commented on if possible (i.e., degree of egg or sperm development).

2 Wipe specimen clean of mucous and foreign matter with de-ionized water (stored in a glass container) prior to dissection.

Dissect specimens on a glass or stainless steel surface only. At no time should the sample come into contact with plastic.

dissecting

3 When removing a block of tissue from the specimen, the pre-cleaned (solvent washed, heat treated) cutting instrument should be wiped clean after each incision using a paper towel soaked with de-ionized water. Use a new paper towel for each specimen dissected. Care should be taken not to cut into the digestive tract during dissection.

4 Remove a minimum of 50 g of muscle tissue and place in a pre-labeled glass container (acetone washed, heat treated at 400°C and available from the issuing laboratory). Remove the liver and place in a pre-labeled glass container. Muscle tissue samples should be free of skin and bones. Liver samples must exclude the gall bladder.

5 Immediately place each tissue cup into a re-sealable bag (e.g. Ziploc) and then in a cooler with ice packs (or dry ice if possible if sample is to be analyzed for volatile or semi-volatile organics).

6 Wipe the dissecting board clean with de-ionized water before proceeding to the next specimen.

8.10 PROTOCOL FOR SAMPLING PARASITES IN FISH

Overview

All organisms to be examined for any particular survey should come from the same habitat and should not be pooled across habitats. Twenty to 30 organisms are required for a general parasite survey from the average age or size class for the population. For best results, analysis of data by age, size, sex, or season requires 30 host animals in each class. Samples of 25-30 fish permit detection of parasites if the prevalence is 10% or more. Detection of rare parasites requires greater sample size. Preferably, host organisms should be examined fresh for parasites or organisms should be frozen as soon as possible after capture.

Hosts fixed in preservative are of little use for parasitological examinations. Fish can be euthanized by pithing if small, a blow on the head if large, by cervical dislocation, or by an overdose of anesthetic such as tricaine methanesulfonate (MS 222). All hosts should be individually bagged to prevent loss of ectoparasites and labeled with collection data (date, sampling site, collector). Host organisms returned to the laboratory alive should be examined within a few hours. Otherwise, parasites with direct life cycles may spread between hosts or increase on infected hosts. Hosts kept in captivity for prolonged periods may lose many parasites. Loss of ectoparasites also may occur with certain methods of capture such as gill-netting. Parasite surveys should be done in spring-early summer and late summer because populations can fluctuate seasonally. If only one survey is scheduled, sample in July.

Sources

EMAN (Undated b)

At a glance

1 Capture fish using any of the methods outlined in the Manual.

2 Record host species, date caught, site sampled, method of collection, name of collector, name of examiner.

examine rinse

3 Measure and weigh fish. Rinse external surface; collect rinse and examine with stereomicroscope for ectoparasites. Examine external surface using stereomicroscope.

4 Remove gills, rinse. Examine each gill arch individually and the rinse with stereomicroscope.

5 Rinse buccal cavity; examine rinse with stereomicroscope.

6 Remove, dissect, and examine eyes (humor, retina, lens) with stereomicroscope.

7 Remove otoliths, fins, or scales for aging, if required.

examine organs

8 Remove fins and examine with stereomicroscope.

9 Open body cavity ventrally; record sex. Examine cavity and surface of internal organs (heart, liver, spleen, gall bladder,

digestive tract, gonads, kidney, urinary bladder) for parasites. Separate organs into Petri dishes with water.

10 Separate stomach, pyloric caeca, and intestine. Open longitudinally and examine for parasites with stereomicroscope. For extensive gut contents, rinse into beakers, mix with sodium bicarbonate (1 spoonful per litre) to remove mucus, and allow parasites to settle. Decant and examine residue with stereomicroscope.

11 Cut organs and tissue (wall of stomach, pyloric caeca, intestine, liver, spleen, kidney, heart and large blood vessels, gonads, gall bladder, urinary bladder, brain) into smaller pieces, compress between glass plates, and examine with stereomicroscope.

12 Rinse the body cavity and examine rinse with stereomicroscope.

13 Thin-slice musculature and inspect for parasites.

14 Record number of parasites of each species and their location in the host on data sheet.

15 Fix all live parasites in hot or warm fixatives to kill them rapidly and at the same time avoid muscular contractions by the parasites, which then distorts their shape when fixed. For living, small monogeneans firmly attached to the gills, freeze a section of tissue with parasite attached overnight in water or 0.7% saline solution. The parasite will detach from the tissue and relax. It can then be thawed, retrieved, and fixed in 10% buffered formalin. Other helminths (cestodes, trematodes, acanthocephalans) should be heat-fixed in 70% ethanol, or relaxed in tap water (if alive) and fixed in 10% buffered. Nematodes should be fixed in hot (not boiling) 70% ethanol with 5% glycerol. Berland's fluid may also be used for nematodes and platyhelminths. Encysted parasites can be removed from their cysts by careful dissection with fine needles or forceps or gentle pressure with a coverslip on a slide. If these techniques fail, place the cyst in 0.5% trypsin and heat to 37-40°C. Encysted acanthocephalans found in the viscera can be placed in tap or distilled water in the refrigerator overnight to stimulate eversion of the proboscis. Fix in 70% ethanol, 10% buffered formalin or AFA.

use hot or warm fixatives

careful dissection

16 Anesthetize arthropods in carbon dioxide bubbled through water, and then fix them in 70% ethanol.

17 Narcotize leeches to avoid contracting when fixed. Carbon dioxide bubbled through water can be used to anesthetize leeches after which they can be fixed in 10% buffered formalin.

18 Place each parasite species or type from each organ in a separate vial and label with host species and host number, geographic locality, date of capture, location in host, fixative used, and date of examination. Formalin- or AFA-fixed specimens should be transferred to 70% ethanol after 1-7 days,

and definitely for a few days prior to staining.

19 Stain monogeneans, trematodes, cestodes, and acanthocephalans in acetocarmine and mount them on permanent slides. Acanthocephalans should be pricked in a few places with a fine needle prior to staining.

20 Clear nematodes by evaporation in glycerol in 70% ethanol, letting the alcohol evaporate in the case of small worms, or gradually reducing the alcohol content and increasing the glycerol content of the mixture with large worms (>1 cm). Examine arthropod parasites whole.

9.0 PROTOCOLS FOR SAMPLING INVERTEBRATES

9.1 PREVENTION OF SPREAD OF AQUATIC INVASIVE SPECIES

Overview

Ensure specific protocols are followed to prevent the spread of aquatic invasive species when sampling for invertebrates. Ensure specific nets and gear are used for each water body, the following cleaning protocols should be used after retrieving or before setting nets and related gear into a new water body.

Sources

Manitoba Water Stewardship (2010)

At a glance

1 Clean and inspect all nets and gear by removing all plants, animals and mud at the source.

2 Rinse nets and gear using high pressure, extremely hot tap water – preferably 50°C (120°F), or dry nets and gear for at least 5 days in the hot sun (if rinsing is not available).

3 Alternatively, freeze all nets and gear for two or more days, or soak nets and all equipment in a 1) table salt water solution (230 g (2/3 cup) of salt to 1 L (1 gallon) water) for 24 hours or 2) undiluted white vinegar for 20 minutes, or 3) diluted household bleach solution (> 5% sodium hyporchlorite at a concentration of 100 ml (~3 ounces) of bleach to 20 L (~5 gallons) of water) for 60 minutes.

9.2 PROTOCOL FOR SAMPLING INVERTEBRATES IN STREAMS

Overview

The invertebrate collecting and processing protocols outlined in this document are designed primarily for the intention of collecting specimens for identification purposes. The various collection techniques are partially selective in terms of the species and size classes that each captures. Therefore, the particular method to be used will depend on the purpose of the study and will be outlined in the project design.

The mesh size used to collect/process the invertebrate sample determines the composition of the benthic invertebrate sample collected. In streams and rivers, benthic invertebrates are collected from either erosional or depositional substrates and a variety of samplers are used. Open water benthic invertebrate sampling programs are usually conducted in early spring or fall when benthic communities tend to be the most stable and relatively low flows facilitate sampling. It is also important to maintain consistency of time of sample collection within and between years. There are a number of qualitative and

quantitative sampling techniques each with advantages and disadvantages.

The Drift net sampler can also be used to collect the emerging or drifting invertebrate stages while a Surber sampler can be used for depths less than 30 cm. The Neill or Hess cylinder sampler is one of the most commonly used benthic invertebrate samplers to sample erosional substrates in streams and rivers. This sampler is suited to a range of erosional substrate types such as gravel, cobble, small boulders, and sand. Although, it is limited to a relatively shallow sampling depth in flowing water, a modified version of the Neill cylinder (mesh: 210 µm; substrate contact area: 0.1 m^2) has been used to sample benthic invertebrates in major rivers.

Sources

Environment Canada (2007), Alberta Environment (2006a), Ontario Ministry of the Environment (2005)

Special safety concerns

Formalin is used as a preservative and is a suspected carcinogen. It should be used with extreme care and the MSDS should be read.

Other sources

B. C. WLAP (2003), Environment Canada (1999), EMAN (Undated c)

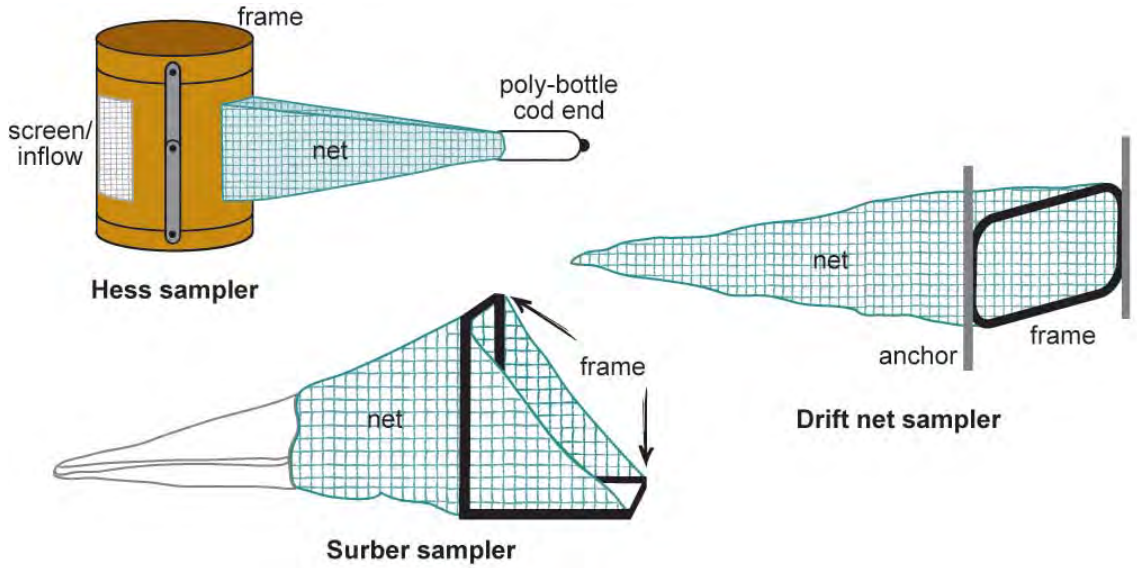


Figure 13. Common types of invertebrate samplers (Alberta Environment (2006) and British Columbia MWLAP (2003))

9.3 PROTOCOL FOR SAMPLING INVERTEBRATES WITH A TRAVELLING KICK AND SWEEP – LAKES

Overview

The Travelling-Kick-and-Sweep is the standard sampling method; it is typically applied by wading along transects through the habitat of interest, kicking the substrate to dislodge benthos, and collecting dislodged benthos by "sweeping" a hand-held net through the water. Most benthos biomonitoring surveys use a net mesh size between 250 micron and 1 mm but a 500 µm size is common. Samples should be collected at the same time of year at individual sites.

Sources

Ontario Ministry of the Environment (2005)

At a glance

lake segments

1 Choose a set of three representative lake segments (ideally this is done by randomly selecting three from a set of possible locations on a lake), in which a series of transects (running from the water's edge to the 1 m depth; see Figure 14) will be sampled. These lake segments should be enclosed in the area where aquatic ecosystem condition is questioned.

2 Use a net (commonly 500 µm mesh) and a Travelling-Kick-and-Sweep along transects to collect the sample. Vigorously kick the substrate to disturb it to a depth of ~5 cm. To collect dislodged materials, sweep the net back and forth and up and down as you move along the transect. Sample for about 10 minutes per replicate, or until you are sure that at least 100 animals have been collected. At least one complete transect (from shore to 1 m depth) must be sampled. Sieve the collected sample in the net. Rinse off and remove large rocks, plant material, etc. Release any non-benthic animals collected. Transfer net contents to a bucket. To prevent the net from clogging, material may need to be transferred several times as you collect each replicate.

release non-benthic animals

3 Record sampling time (active sampling time only, time spent transferring net contents into the bucket not included), distance, and any other information required on the field sheet.

4 Repeat until three replicates are collected.

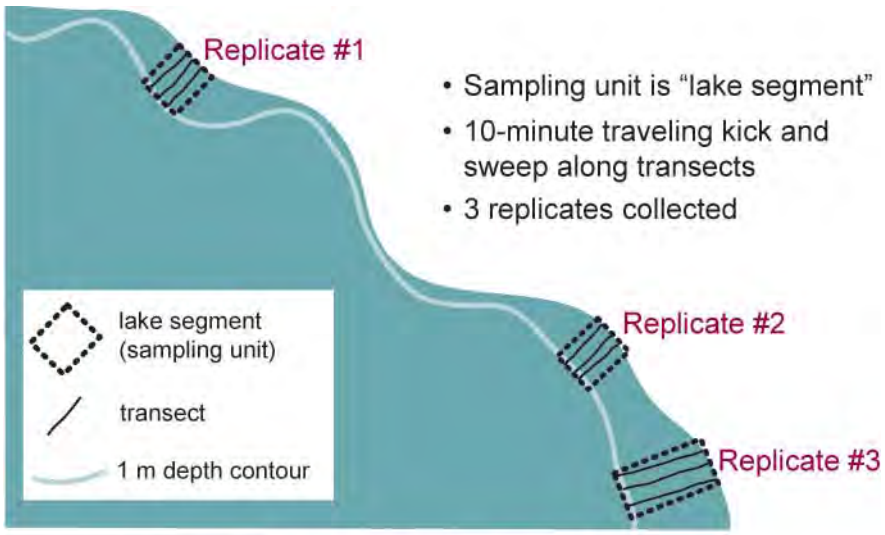


Figure 14. Travelling kick-and-sweep method for lakes
(Source: Ontario Ministry of the Environment (2005))

9.4 PROTOCOL FOR SAMPLING INVERTEBRATES WITH A TRAVELLING KICK AND SWEEP – STREAMS

Overview

The Travelling-Kick-and-Sweep is the standard sampling method; it is typically applied by wading along transects through the habitat of interest, kicking the substrate to dislodge benthos, and collecting dislodged benthos by "sweeping" a hand-held net through the water. Most benthos biomonitoring surveys use a net mesh size between 250 micron and 1 mm but a 500 µm size is common. Samples should be collected at the same time of year at individual sites.

Sources

Ontario Ministry of the Environment (2005)

At a glance

1 Where possible, identify a sampling unit that contains 2 riffles and 1 pool**.** In sampling units containing multiple riffles or pools transects should ideally be located randomly. However safety and ease of access must always be considered.

2 Sample the farthest downstream transect in the Sampling Reach. Place a net downstream from you (commonly 500-µm-mesh with the net held close to the stream bottom). Start the timer and beginning at either the right or left bank, walk along the transect to the opposite bank, vigorously kicking the substrate to disturb it to a depth of ~5 cm. Sweep the net back and forth (both vertically and horizontally through the water column) and keep it downstream from, and close to, the area being disturbed so that dislodged invertebrates will be carried into the net. A good sweeping motion is particularly important in areas of slow current to ensure animals are collected in the net (the sweeping motion is less important when sampling in strong current). Kick-and-sweep about 10 m of the transect in about three minutes (this sampling effort may be reduced if benthos are known to be abundant).

sweeping motion

3 In large rivers using the 3-minute/10 m guideline, sample short segments along the transect (essentially a point-transect approach), in a way that covers the range of current velocities exhibited across the channel cross-section (Figure 17). On the other hand, sticking to the 3-minutes/10 m guideline in small streams requires that several transects be positioned in the same riffle or pool (Figure 18).

4 Sieve the collected sample in the net. Rinse off and remove from the sample large material like rocks and wood. Release any non-benthic animals collected. Transfer net contents to a bucket. To prevent the net from clogging, material may need to be transferred several times as you sample each transect. Placing your bucket on the side of the stream where you start sampling allows frequent trips to the bucket without disturbing transect

sections not yet sampled.

5 Record sampling time (active sampling time only, time spent transferring net contents to bucket not included), distance, and all other information required on field sheet.

6 Move to the next upstream transect and repeat until all transects have been sampled. If non-wadeable portions of the channel cross section are encountered, sample only the safely wadeable portion.

7 Record the number of transects used, total distance traveled on each transect, total time spent collecting invertebrates, and wetted width at each transect as well as all other information on the field sheet.

8 Rinse the net and maintain any recovered benthos with the sample.

9 For large rivers (Figure 17), portions of the transect are selected randomly within each current speed stratum (labeled 1-5) to give an approximate 10 m and 3-minute composite sample for the transect.

10 For small rivers, additional supplementary transects are located immediately upstream from each pool and riffle transect to provide sufficient sampling distance (i.e., approximately 10 m).

11 Repeat until three sub-samples are collected.



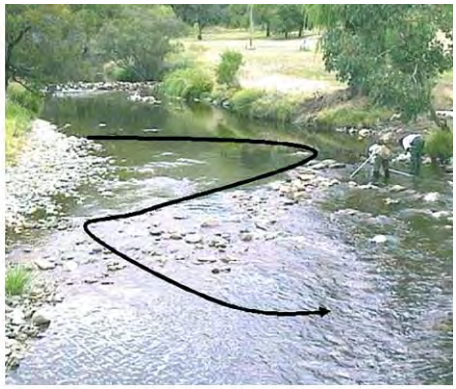


Photo 18 (left): Triangular shaped kick net sampler (400 micron mesh and removable cup) (Source: Environment Canada (2007))

Photo 19 (right): Kick net transect through a riffle (Source: Environment Canada (2007))

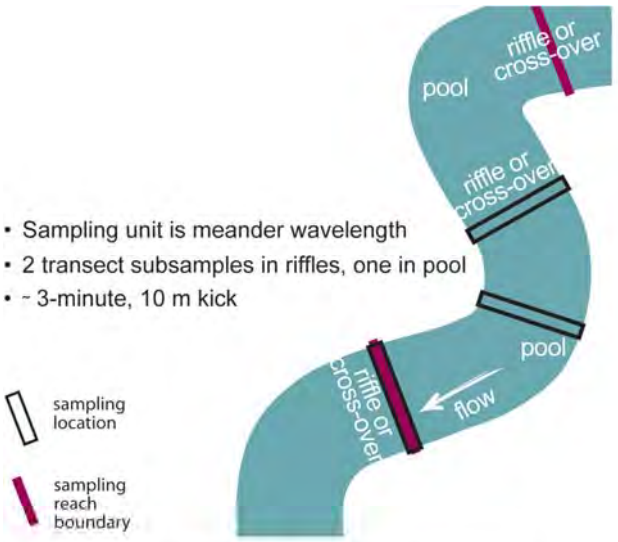


Figure 15. Travelling kick-and-sweep-transect method for wadeable or partially wadeable streams (Source: Ontario Ministry of the Environment (2005))

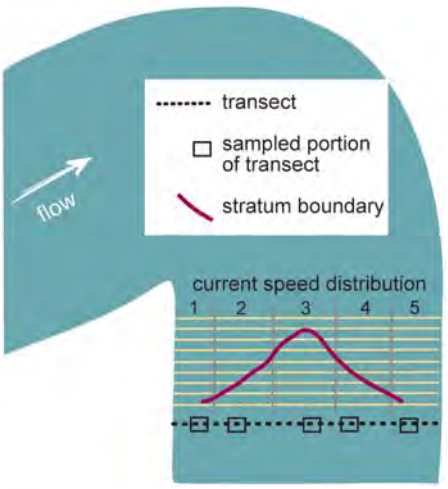


Figure 16. Large river transect kick method (Source: Ontario Ministry of the Environment (2005))

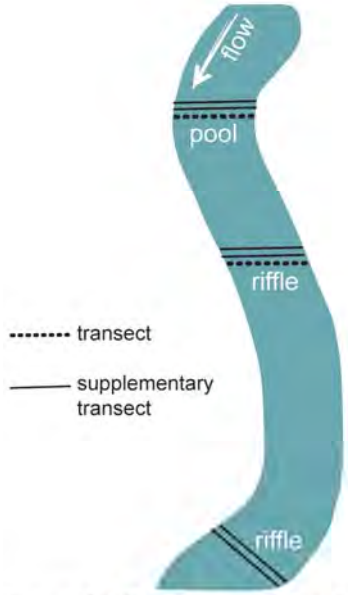


Figure 17. Small river transect kick method (Source: Ontario Ministry of the Environment (2005))

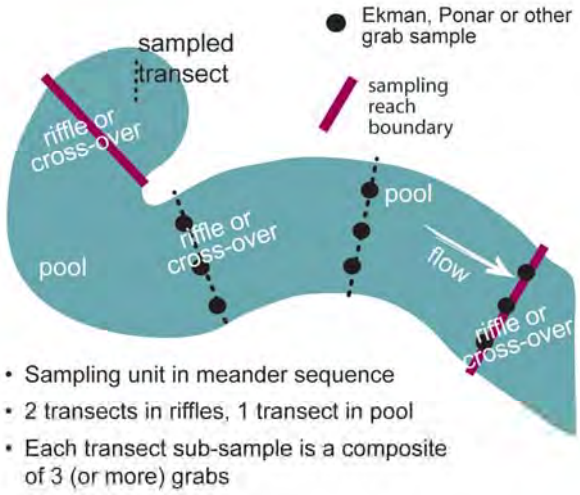


Figure 18. Grab sampling method for non-wadeable streams (Source: Ontario Ministry of the Environment (2005))

9.5 PROTOCOL FOR SAMPLING INVERTEBRATES WITH A DRIFT NET SAMPLER

Overview

Drift net samplers are designed to be anchored in flowing water to capture macro-invertebrates that have migrated or have been dislodged from the bottom surfaces into the current. They are limited to use in small, shallow streams. Ideally, drift nets should span the entire width of the stream that is being sampled. Several nets can be placed across the stream channel to capture all drift organisms and to measure spatial variation in the drift.

Sources

Alberta Environment (2006), British Columbia MWLAP (2003)

At a glance

1. Anchor drift nets in water sufficiently shallower than they will extend above the water surface. Set drift net samples for the time specified by the project design (the length of time is designed to collect a representative sample, but not so long that flow through the nets becomes impaired by clogging from captured particulate matter).
2. Transfer the organisms into pre-labeled sample bottles.
3. Preserve with 70% ethanol and place in cooler. Initial fixation may be done with 10% formalin.
4. Record time, area of net opening, stream discharge per unit time, and volume of water filtered in the field logbook.

9.6 PROTOCOL FOR SAMPLING INVERTEBRATES WITH A SURBER SAMPLER

Overview

The Surber sampler consists of two interlocking frames that support a capturing net. One frame outlines the area of stream bed to be sampled while the other supports the net. The sampler is intended for use in shallow (30 cm or less) flowing waters. Use tent pegs (hooked) to anchor Surber in fast moving water. Repetitive sampling should be timed (i.e., 5 minutes each for more uniform sampling).

Sources

Alberta Environment (2006), British Columbia MWLAP (2003)

At a glance

1 Choose a wetted width location where substrate is fairly uniform. Provide a description of general habitat (e.g., is this a run, pool, or riffle section, etc.). Position the sampler securely at a random location on the stream bottom parallel to water flow with the net portion downstream. The mesh size of the net should be compatible with the goal of the program. Take care not to disturb the substrate upstream from the sampler.

2 Carefully turn over and lightly rub all rocks and large stones that lie within the frame. This process dislodges organisms that are clinging to the stones. Examine each large stone for organisms, including larval or pupal cases that may be clinging to the stone before discarding (downstream or to the side of the sampler). In order to maintain comparability between stations, a limit on time spent on handling and rubbing the substrate should be set (5 minutes recommended).

3 Stir remaining gravel with your hands to a depth of 5 to 10 cm.

4 Move the sampler upstream to a new randomly selected patch of stream bottom and repeat steps (1) through (3). Continue this process until five patches of stream bottom have been sampled, each upstream from the last. This creates a composite of the five samples. The total area sampled will depend on the size of the sampler (x 5) and should be calculated and recorded in the field logbook.

repeat steps 1 through 3

5 Return to shore and carefully invert the net into a shallow pan containing stream water. Ensure all invertebrates are rinsed from the net into the pan.

6 Transfer the organisms into a pre-labeled plastic sample bottle and preserve with 70% ethanol. Rinse sample net after each use.

9.7 PROTOCOL FOR SAMPLING INVERTEBRATES WITH A HESS SAMPLER

Overview

The Hess sampler is a metal cylinder with a screened opening on one side and an opposite opening with a net attached (Figure 13). The sample collector places the Hess sampler in the stream with the screen oriented into the current and the net trailing behind. The water is able to flow freely through the sampler and out through the net. With a known radius, the stream bed area that is sampled is easily calculated. This value must be recorded in the **field logbook**

.

Sources

Alberta Environment (2006), British Columbia MWLAP (2003)

At a glance

1 Position the frame securely on the stream bottom. Ensure the screened opening is facing into the current and the net portion is trailing downstream. Hold the sampler in position by applying pressure with your knees. Take care not to disturb the substrate upstream from the sampler.

2 Reach into the cylinder and carefully turn over and lightly rub all rocks and large stones. This process dislodges organisms that are clinging to the stones and washes them into the net. Examine each stone for organisms, including larval or pupal cases that may be clinging to it before discarding it outside of the cylinder. In order to maintain consistency between samples, a standard time should be assigned to sampling each site (5 minutes recommended).

carefully rub rocks

3 Stir remaining gravel with your hands to a depth of 5 to 10 cm.

4 Move the sampler upstream to a new patch of stream bottom and repeat steps (1) through (3). Continue this process until five patches of stream bottom have been sampled, each upstream from the last. This creates a composite sample of the five areas.

5 Return to shore and carefully wash the contents of the net into the cod-end then transfer to a shallow pan. Ensure all invertebrates are rinsed into the pan.

6 Transfer the organisms into a pre-labeled sample bottle and preserve with 70% ethanol. Rinse sample net after each use.

9.8 PROTOCOL FOR SAMPLING INVERTEBRATES WTH A NEILL SAMPLER

Overview

The Neill sampler is a metal cylinder with a screened opening on one side and an opposite opening with a net attached (Figure 13).

Sources

Alberta Environment (2006), British Columbia MWLAP (2003)

At a glance

1 Evaluate the study area to determine the dominant substrate type(s). Ensure this substrate is sampled at each site, and choose sites where there is sufficient current to inflate the sampler net.

2 Sample in depths of 30 to 50 cm of water.

3 Collect five samples per site, either in a transect perpendicular to shore or at random.

4 Label five Nalgene bottles with site, date, location, sample number, and sampler's initials.

5 Rinse net thoroughly between sample sites.

6 Ensure that the net is securely mounted on the Neill cylinder.

7 Screw a Nalgene bottle onto the net receptacle.

8 Place the loose end of the net with the bottle attached into the top of the cylinder.

9 Moving in an upstream direction, select an area of undisturbed substrate to sample.

check the seal

10 Press the sampler into the substrate with the opening opposite the net facing the current. Feel inside the cylinder to ensure that there is a good seal. The teeth of the cylinder should be completely buried in the substrate.

11 If the seal is inadequate, rinse the net and bottle clean and select another sampling spot.

12 Once the cylinder is firmly anchored in the substrate, hold it there by standing on the lower handles. Flip the net end with the bottle out of the cylinder and into the water.

characterize the benthic habitat of the site

13 Remove any large stones from inside the cylinder. Scrub them gently by hand and rinse them in the cylinder until no invertebrates remain attached to them. OPTIONAL: if not doing a visual characterization of substrate save these rocks to characterize substrate size.

14 Using the small shovel, stir the substrate for about 1 minute. Ensure that the net does not clog. Clogging will keep invertebrates from collecting in it. To prevent clogging gently stroke and shake the net.

15 Stirring the sediment too vigorously, slow flows, or the net clogging can cause particles to escape out of the upstream opening of the cylinder.

16 Let the inflowing water wash all the suspended particles from the cylinder into the net. The water in the cylinder should

become as clear as the river water.

17 Gently stroke the net with your hands so that the particles in it move towards and into the Nalgene bottle.

rinsing the net

18 Lift the cylinder out of the water and repeatedly rinse the net by plunging it in and out of the water. Wash all particles and invertebrates into the Nalgene bottle. Check for any invertebrates caught in the net and make sure they are collected.

19 Press the netting against the bottle mouth, invert the bottle and pour out most of the water. Turn the bottle right side up and splash the net with water to return any particles clinging to it into the bottle.

20 Unscrew the Nalgene bottle from the net and preserve the sample with buffered formalin immediately after completing the collections. Add approximately 1 part of full strength buffered formalin to 10 parts of sample (if the sample contains a large amount of organic matter, algae, and invertebrates, add approximately 1/5 the sample volume of buffered formalin).

21 Determine depth of water at each sample location using a meter stick or calibrated shovel.

22 Use a current meter to obtain water velocity at 0.6 of total depth from surface, at each sample location. Count the number of revolutions in 60 seconds. Use earphones if water is turbid. Repeat the procedure for the remaining samples. Always sample upstream, and away from disturbed areas.

photo needed

23 Take photographs of the site looking both upstream and downstream. Record and collect the following supporting data to characterize the benthic habitat at that site: Water Depth (use a depth sounder, meter stick or velocity meter rod to measure the water depth at the approximate location that the benthic invertebrate sample was collected); Substrate Characterization: (characterize the sediment grain size of erosional substrates by visually estimating the percent aerial coverage of standard particle size categories according to classification systems); and Other: (wetted and bankfull channel widths; GPS coordinates and site description; % macrophyte cover or qualitative description of epilithic algal cover; qualitative description of the amount of silt present). Depending on study design, supporting information may also need to be measured including pH, DO, temperature, and conductivity directly upstream from the approximate location that the benthic invertebrate sample was collected.

Under-ice conditions

1 Use an ice auger to survey for possible sites, keeping depths, substrate, and flows as similar as possible between sites. Choice of a site may require deeper water than cylinder height; the nylon bag over the cylinder will prevent escape of invertebrates. Water up to 1 m deep may be sampled, depending on flow.

2 Use chain-saws/augers to excavate a hole in the ice approximately 1 - 1.5 m wide and 2.5 - 3 m long, oriented with long part of hole in direction of flow. Use ice tongs to extract ice blocks, ensuring that substrate is undisturbed. A crew of three is needed to search for and excavate sites for sampling.

3 Attach guy ropes to bottom handles of cylinder and safety ropes to the two persons in dry suits. Other ends of ropes should be fastened to ice picks pounded into ice for safety. Put shovel through top of cylinder bag and pull drawstring tight around handle.

4 During ice-removal and entry into the hole, care should be taken not to disturb the benthic area to be sampled.

3 people are needed

5 Note that three people are needed to sample efficiently and safely. With one person on ice (upstream of hole) handling the cylinder guy ropes and safety ropes, the samplers enter the downstream end of hole and drill the cylinder into undisturbed substrate.

6 The cylinder should be drilled into substrate far enough to ensure a good seal. Note that two people are needed in the water to ensure enough downward force to keep the cylinder anchored into substrate. Use the shovel to agitate the substrate at bottom of cylinder for approximately 2 minutes. Allow the cylinder to sit for 2-3 minutes to allow invertebrates to drift into net and bottle. Stroke net to prevent clogging.

7 Haul the cylinder out of water. Process the sample following open water procedures described in the previous protocol and put a new bottle onto net. The other person in the water will do a velocity measurement with current meter at the sample location as well as a depth measurement. Often, biofilm samples are required in triplicate from each hole, so nine rocks need to be collected.

8 Take necessary precautions to ensure that samples are not frozen during handling and storage. Samples can be stored in an insulated container (e.g., cooler) equipped with hot water bottles.

photo needed

9 Take a photograph at each site and record supporting information such as: GPS coordinates, water velocity and depth, ice depth, and substrate characteristics (visual assessment).

10 Proceed upstream of first replicate location about one pace to obtain undisturbed substrate, and repeat the sampling procedure. The opening should allow collection of five replicates.

9.9 PROTOCOL FOR SAMPLING INVERTEBRATES WITH A GRAB SAMPLE

Overview

The grab sampling method yields a composite transect-kick-like sample for each pool and riffle transect in the sampling unit (Figure 19). Grab sampling is most often done in slow, deep, non-wadeable streams. See the protocol in the Manual for sampling in soft sediments.

Sources

Ontario Ministry of the Environment (2005)

Special safety concerns

Formalin is used as a preservative and has been identified as a suspected carcinogen. Formalin should be used with extreme care and the MSDS should be read.

At a glance

1 Use a dredge (as outlined in the Section of the Manual for sampling in soft sediments).

2 Select two riffles and one pool transects.

3 Sampling from a boat, bridge, or similar vantage point that allows access across the stream cross section, collect and pool at least three grab (e.g., Ekman dredge or Ponar grab) samples per transect to ensure 100 animals are collected. Use an Ekman dredge or Ponar grab in fine sediments where jaw closure is not a problem. A Ponar Grab can be used in most other cases. Other types of equipment can be used where appropriate. Record sampling device on the field sheet and provide device specifications.

at least 3 grab samples

4 Rinse the sampling gear into the sample collection bucket. Rinse and discard any large substrate features collected with the sample. Release any non-benthos animals collected.

5 Record the number of grabs pooled per transect and all other information required on the field sheet.

9.10 PROTOCOL FOR SAMPLING INVERTEBRATES WITH ARTIFICIAL SUBSTRATES

Overview

Artificial substrates are placed in the stream so it is colonized by the organisms in the stream then removed later and analyzed. These types of samplers are best suited for upstream/ downstream studies or to test for changes over time. They do not necessarily provide a representative sample of the actual community that is living in the stream. Advantages and disadvantages are:

Advantages with artificial substrates:
- Access to areas that can't be sampled because of substrate or depth,
- Reduced variability,
- Non-destructive sampling of a location, and
- Flexibility in sampling design.

Disadvantages with artificial substrates:
- Colonization rates differ from site to site,
- Species in sampler may be different than stream bottom,
- Long incubation/exposure times (6-10 weeks), and
- Vulnerability of samplers to vandalism.

The most frequently used artificial substrate sampler is the "barbecue basket" sampler which is made by filling a basket (available in a number of variations from hardware stores) with gravel (2.5 to 7.5 cm diameter) that is then placed in the stream bottom. The substrate becomes colonized and is removed after some predetermined length of time.

Sources

British Columbia MWLAP (2003)

Special safety concerns

Formalin is used as a preservative and has been identified as a suspected carcinogen. Formalin should be used with extreme care and the MSDS should be read.

At a glance

1 Place the basket sampler in the stream and anchor if necessary. Leave in place for the necessary colonization time.

be careful not to dislodge organisms

2 When the samplers are removed, take particular care not to dislodge organisms from the sampler. A general technique is to carefully place the basket sampler in a plastic bag underneath the water before it is lifted out.

3 Record time, any site related data such as flow, temperature, and pH (see the Ambient Freshwater and Effluent Sampling chapter), and any data about the appearance and condition of the basket sampler in the **field logbook**.

4 In the laboratory, remove the organisms from the sampler by carefully washing each rock into a sieve. Transfer the organisms into pre-labeled sample bottles. Preserve with 70% ethanol and place in cooler. Initial fixation may be done with 10% formalin

before transfer to ethanol for longer term storage.

Other sources

Environment Canada (2007), Alberta Environment (2003 a), Ontario Ministry of the Environment (2005), Environment Canada (1999), EMAN (Undated c)

9.11 PROTOCOL FOR SAMPLING INVERTEBRATES IN WETLANDS

Overview

The grab sampling method yields a composite transect-kick-like sample for each pool and riffle transect in the sampling unit (Figure 19). Grab sampling is most often done in slow, deep, non-wadeable streams. See the protocol in the Manual for sampling in soft sediments.

Sources

Ontario Ministry of the Environment (2005)

Special safety concerns

Formalin is used as a preservative and has been identified as a suspected carcinogen. Formalin should be used with extreme care and the MSDS should be read.

At a glance

Travelling Kick and Sweep

1 Plan a set of transects within a Wetland Segment.

transfer net contents frequently

2 Use a net (commonly 500 µm mesh) and walk along wadeable transects, vigorously kicking the substrate to dislodge benthos and bottom materials. Sweep the net through the water column to catch dislodged material. Transfer net contents to a bucket frequently to prevent the net from clogging.

3 Continue to sample transects for 10 minutes or until 100 animals have been collected. At least one transect that spans the length of the Wetland Segment should be sampled. Record time spent sampling, distance covered, and any other information required on the field sheet.

4 Thoroughly rinse net contents into a bucket.

5 Repeat steps 2 to 4 for each replicate.

Jab and Sweep

1 Select locations for jab and sweep sampling within a Wetland Segment

2 Jab a D-net (commonly 500 µm mesh) into the substrate to a depth of 5 cm and sweep it forward until the net fills with disturbed material. Pool three or more jab and sweeps per replicate to ensure that at least 100 animals are collected.

3 or more jabs per replicate

3 Record the number of jab and sweep samples pooled per replicate as well as other information required on field sheet.

4 Thoroughly rinse net contents into a bucket.

5 Repeat steps 2 to 4 for each replicate.

Coring

1 Record corer specifications on the field sheet.

2 Probe the ground first with a small diameter steel wire to ensure the absence of large rocks or other materials that cannot be cored. Lubricate walls of corer with cooking spray. Twist corer to penetrate substrate to a depth of about 10 cm. Remove the corer from the soil using a rocking motion until the bottom breaks free. Gently lift the corer, placing a hand over the bottom opening to prevent the sample from falling out. Pool a minimum of three cores per replicate to ensure at least 100 animals are collected. Take more samples if it appears that less than 100 animals have been collected.

use rocking motion

3 Rinse the corer into a bucket.

4 Continue sampling until three replicate samples are collected.

5 Record the number of cores pooled per replicate, corer specifications, and other information required on field sheet.

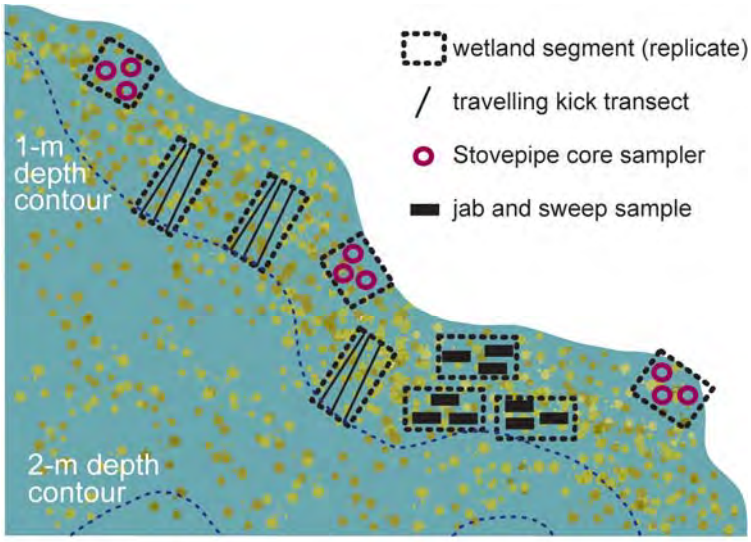


Figure 19. Wetland benthos collection methods
(Source: Ontario Ministry of the Environment (2005))

9.12 PROTOCOL FOR SAMPLING INVERTEBRATES IN SOFT SEDIMENTS

Overview

Open water benthic invertebrate sampling involves the collection of invertebrates that inhabit the upper sediment layers and the sediment surface. Typically macroinvertebrates are sampled with some meiofauna including early insect instars. Meiofauna is defined as microscopic animals that pass through 500 µm screen but are retained by a 64 µm screen. The mesh size used to collect/process the invertebrate sample determines the composition of the benthic invertebrate sample collected. Some depositional areas in rivers and streams as well as lakes and reservoirs are most suited to the use of Ponar or Ekman grab samplers for sediment collection. Ponar grab samplers are most efficient at sampling harder sediments while Ekman grab samplers are most efficient in softer sediments. Open water benthic invertebrate sampling programs are usually conducted in early spring or late fall when benthic communities tend to be the most stable. It is also important to maintain consistency of time of sample collection within and between years.

Sources

Alberta Environment (2006 a), Ontario Ministry of the Environment (2005), Environment Canada (1999)

Special safety concerns

Formalin is used as a preservative and has been identified as a suspected carcinogen. Formalin should be used with extreme care and the MSDS should be read.

At a glance

1 Label the sample containers with site identification, sample type, sampling method, sampler ID, and the date of collection. Take a photograph of the site.

info to be noted

2 Note the following site information in the field sheet/book: target and actual sampling location (GPS), date and time of sample collection, overlying water depth (m), ambient weather conditions, grab penetration depth, depth sub-sampled, sampling personnel, and any deviations from the field sampling procedure (FSP), macrophyte growth.

3 Ensure that the dredge jaws open and close properly.

do not allow sampler to free fall

4 Lock the dredge jaws in the open position and lower in a controlled fashion to the lake bottom. Do not allow the sampler to “free fall” The sampler should be in contact with the substrate or positioned just above it

5 Drop the messenger (if applicable) and first slowly then quickly raise the dredge to the surface.

criteria for acceptable sample

6 The sample is deemed acceptable if the desired depth of penetration has been achieved, the sampler has completely closed and was not inserted on an angle or tilted upon retrieval. If the sample does not meet these criteria the sample should be retaken close to the original sampling location. The rejected

sample should be discarded in such a way that it will not affect subsequent sampling efforts.

7 Place a container/bucket beneath the sampler just as it breaks the water surface.

8 Open the grab sampler over a 250 or 210 µm mesh sieve box. If substrate materials are predominately fines, gently wash the sample using the sieve box to release the fine sediment and transfer the contents retained on the sieve to pre-labeled 1 L plastic jar(s). Use more than one jar if the sample is large.

on-site sieving

9 If substrates include significant amounts of coarse material or organic debris, on-site sieving may be impractical. In this case, samples may be double-bagged, labeled, kept cool, and transported to a laboratory for sieving (i.e., with the aid of pressurized water). If samples can be kept cool and processed in a laboratory within a few days they may be preserved after sieving, otherwise the samples should be preserved at the time of collection.

10 Add buffered formalin to the sample(s) to achieve a final concentration of 10%. If the sample contains a large amount of organic matter, algae, and invertebrates, add approximately 1/5 the sample volume of buffered formalin.

11 Add a waterproof label with the sample ID to each sample jar (in addition to an external label) and securely cap the jar(s). Agitate the jar(s) to ensure the formalin is evenly distributed throughout the sample(s).

12 Rinse the grab sampler and the sieve in lake water to thoroughly remove residual sediment, invertebrates, or plant material.

13 Site photographs may be taken if they aid in site characterization (e.g., near-shore sites or sites with aquatic plant growth). In addition, supporting data must also be collected to characterize the benthic habitat at that site.

Other sources

B. C. WLAP (2003), EMAN (Undated c), Environment Canada (Undated b)

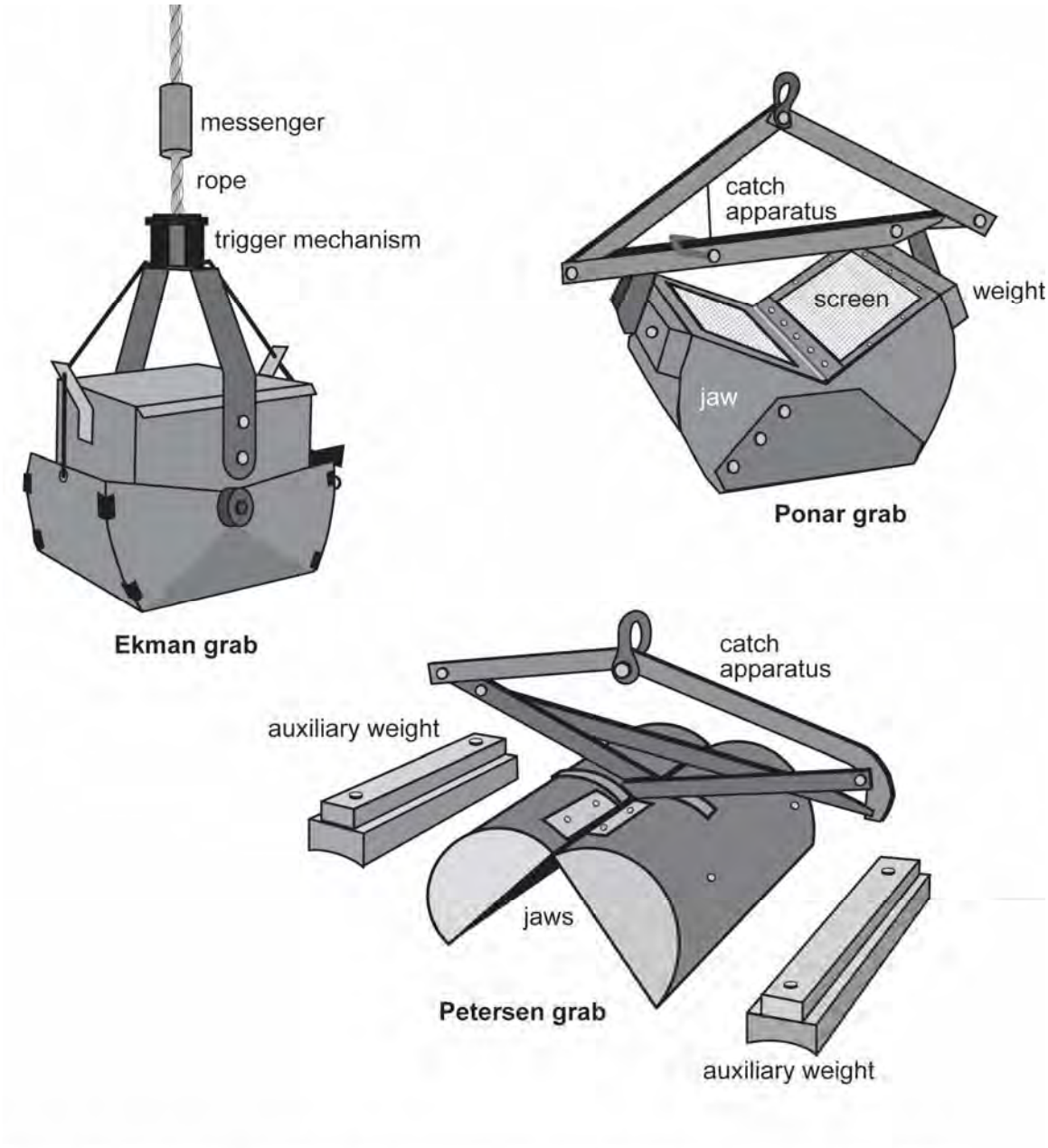


Figure 20. Samplers used for soft sediments (Source: British Columbia WLAP (2003))

9.13 PROTOCOL FOR INVERTEBRATE SAMPLE PROCESSING

Overview

Samples should be sieved in the net in the field. At this time, rocks, wood, leaves, and other large items found in the sample may be discarded after removing all attached benthos. Also remove and release any non-benthos animals collected (e.g., fish). If samples are to be picked live, they should be kept cool and should be processed within 48 hours. For transportation to the laboratory, decant bucket contents into a wide-mouth plastic jar to avoid spills during transportation and to conserve refrigerator space (a consideration when samples will be picked live). Label samples with lake, stream, or wetland name and/or code, date, and sample number. Insert labels in the vessel containing the sample in case labels get washed off the container; regular paper and pencil work fine for this purpose.

Samples may be preserved with 10% buffered formalin (a good fixative) as long as safety precautions are observed. Alcohol (e.g., ethanol, methanol, isopropanol) can also be used to preserve samples. If buffered formalin is used for initial fixation, replace it with alcohol after a couple of days to prevent hard body parts (e.g., clam and snail shells) from dissolving. When using alcohol for preservation in the field, a good method is to first sieve the sample to remove much of the water, transfer to a suitable container, and then add a generous amount of alcohol.

Sources

Ontario Ministry of the Environment (2005)

At a glance

Sieving the sample

remove fines

1 Remove fine particulate matter and preservative from the sample prior to picking benthos. Fines cloud the water in sorting trays, making the task of finding animals much more difficult.

2 Transfer the sample to a 500 µm sieve (500 µm D-net can be used as a sieve) and rinse well with water to remove preservative (if used) and fine suspended particles.

3 Thoroughly rinse and discard large items such as pieces of wood, rocks, and leaves.

4 Rinsate from preserved samples will be sufficiently dilute and of low enough volume to permit disposal via a septic system or municipal sewage system. When disposing sample preservative to a septic system, keep daily 10% formalin discharge to 10 L or less.

Obtaining benthos sub-samples

1 Sub-sampling is a method of removing manageable portions of the sample so that invertebrates can be more easily separated

from debris in the sample and to obtain fixed count samples.

Bucket method

1 Wash the sample from the sieve back into a large container (a bucket works well). Gently swirl the bucket contents to indiscriminately distribute the sample. Randomly remove a small quantity of the sample (using a spoon, ladle or similar gadget) and transfer it to a suitable container.

Marchant Box method

1 Wash the sample from the sieve into the Marchant Box and fill with water to a depth just below the height of the walls dividing the cells. Water depth is important. In the case of live samples, water deeper than the dividing walls will allow animals to swim between the cells once the contents have been randomized. Less water will make it difficult to distribute the sample among the 100 cells.

live samples

2 Close and fasten the lid. Invert and gently mix the sample with side-to-side rocking motions. Right the box quickly and set on a level surface to let contents settle into cells. Using random numbers for the 10 columns and 10 rows, arbitrarily select one or more cells and transfer contents to a suitable container or Petri dish using a pipette (or turkey baster), vacuum pump, or aspirator and suction flask, or similar method.

3 The cell-extraction method used for Marchant sub-sampling strongly influences sample-processing time. Consider the costs of more sophisticated equipment such as aspirators, pumps, suction flasks, and tubing in relation to the improved efficiency resulting from their use. Using an aspirator and suction flask may be the best balance between minimal cost and extraction efficiency.

Picking, identifying, enumerating and preserving benthos

1 Sub-samples should be sequentially removed and picked until at least 100 animals are retained from each sample. 100-animal fixed counts yield reliable estimates of relative abundance and allow samples to be processed relatively quickly (as opposed to full enumerations). In sparse samples (i.e., containing fewer than 100 animals), the entire sample is processed. If fewer than 80 animals are collected, re-sample.

at least 100 animals

2 To be counted, a specimen must have enough intact body parts to permit its identification to the targeted level, and it must have a head (this prevents double counting). Larval exuviate and empty shells (e.g., snails and clams) and cases (e.g., of caddis flies) are not counted.

3 To identify, tally and preserve benthos as they are picked from the sample, transfer a sub-sample into a suitable picking

container such as a Petri dish or a white tray. Add additional water to the tray to aid sorting. Sort through the sample, removing all benthos. Identify and tally animals as these are removed; however, when picking live, speed is important so identify animals after all samples are picked. Set aside specimens that require detailed observation to identify for later identification. The minimum detail for identification is a coarse 27 group mix of Phyla, Orders, Classes and Families.

when picking live, speed is important

4 Place animals into a labeled container with alcohol preservative after they are identified and tallied. Glass jars with lids that give a good seal are commonly used. Animals that cannot be identified should be archived with the rest of the sample; their presence should be recorded on the tally sheet as unknown, but their count is not considered part of the 100-animal sub-sample.

5 Continue picking the sub-sample until all benthos have been removed (no more animals are found during a reasonable period of searching).

6 Continue to sort and identify animals until at least 100 invertebrates have been tallied. The entire sub-sample that contains the 100th animal must be picked in its entirety to allow abundance estimation.

9.14 PROTOCOL FOR SAMPLING INVERTEBRATES FOR TISSUE

Overview

The sampling of benthic invertebrates for tissue contaminant analysis is useful because it provides an indication of exposure or the bioavailability of contaminants in the sediment/water to biota. The sampling of contaminants in benthic invertebrates provides a measure of the current status of contaminants in the aquatic system. Yet it is important to note that this does not demonstrate that the contaminant is causing a detrimental effect to the organism it is simply a measure of exposure. Specifically, the determination of contaminant bioaccumulation in benthic invertebrates identifies the presence and concentration of contaminants in whole organisms, or specific organs and tissues, depending on the study objective and logistics.

Sources

Alberta Environment (2006 a)

At a glance

1 One person will hold the screen/net into the current of the stream and another person will disturb the upstream substrate with feet and/or hand.

2 Bring nets/screens to shore. Place the net contents into several pans for easier sorting of invertebrates; screens can be examined directly.

3 Pick out the target invertebrates for tissue analysis. Candidates for tissue analysis will depend on study objectives and design.

4 Invertebrates of different taxonomic groups (Order, Family, or Genus) can either be a composite in one container, or into separate containers using forceps. Rinse the invertebrates with stream water (passed through the sampling mesh) prior to putting them into the sample containers to remove attached debris/sediment.

rinse invertebrates

5 Sample container should be labeled with site name, date, taxonomic group, and analysis required.

6 Samples should be stored on dry ice immediately and deep frozen to -70ºC within 24 hours.

7 Adequate notes should be kept describing site conditions, substrate, physical variables (temp, pH, DO, conductivity), and site latitude/longitude.

8 Variations of this protocol may incorporate gut depuration/ clearance procedures and procedures to remove contaminants adsorbed to the surface of the sampled invertebrates. The objectives of the study will determine the variations required.

9.15 PROTOCOL FOR BIVALVE AND MOLLUSC SAMPLING

Overview

Comprehensive surveys are carried out to determine the status of shellfish growing waters. Annual review surveys are less intense in nature; they are conducted to update the classification of an area. Annual review surveys can confirm that sanitary conditions have not changed and that the classification is still valid. A re-evaluation survey updates the classification of the area. This may involve an in-depth assessment of the elements in the comprehensive survey. The complexity and extent of a re-evaluation survey will be specific for each area.

Sources

CFIA, Environment Canada, and DFO (2008)

At a glance

Comprehensive surveys

1 Conduct bacteriological monitoring under varied environmental conditions. The number and location of sampling stations selected should be adequate to produce the data necessary to effectively evaluate all point and non-point sources of pollution.

2 A minimum of 15 samples shall be collected at each station. In remote shellfish growing areas this requirement may be modified if warranted by the sanitary conditions in the area.

minimum 15 samples

3 In certain circumstances, an alternative sampling strategy, systematic random sampling, may be followed. All sampling requirements, i.e. standards, sampling frequency, and data analysis are as outlined in the "National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish, 2003".

Annual review survey

1 Review files to evaluate the changes in existing and new pollution sources.

2 Perform a shoreline sanitary investigation and/or bacteriological sampling at representative stations (if deemed necessary).

Re-evaluation survey

1 Conduct bacteriological monitoring under varied environmental conditions. The number and location of sampling stations selected should be adequate to produce the data necessary to effectively evaluate all point and non-point sources of pollution.

2 Collect a minimum of 5 samples at each station.

3 Analyze (a minimum of) the last 15 water samples from each representative station to determine the appropriate classification for the area

10.0 PROTOCOLS FOR IN-SITU SAMPLING

10.1 PROTOCOL FOR IN-SITU SALMONID EGG BIOASSAYS

Overview

Developing embryos have periods of extreme sensitivity when their susceptibility to foreign toxicants is maximal. Fish embryos are no different with extensive data from life cycle toxicity testing to support this. The method described below is based upon starting the bioassay with Pacific Salmonid eggs that have just come into the "eyed stage" of development (the stage between the time the eyes become visible and hatching occurs). This stage of development guarantees that the eggs have been fertilized and that the embryos are hardy enough to be handled and transported. Developmental stages prior to this are extremely sensitive to handling and transportation; mortality rates associated with these factors are very high.

Sources

British Columbia MWLAP (2003)

At a glance

100 eggs per box

computer program

1 Fill egg boxes in the laboratory prior to traveling to the field location; 100 eggs/box. Use a beverage cooler to transport charged boxes to the deployment site. Keep eggs out of direct sunlight since the duration (exposure period) and development of eggs are subject to temperature.

2 Different salmonid species have different rates of development. A computer program, "SALMONID INCUBATION PROGRAMME, VERSION 1.3, DFO, PBS NANAIMO, BY J.O.T. JENSEN", is an excellent way to estimate the study exposure period. The bioassay can have several end-points. The most common end-point is to terminate the study after controls hatch or, the study can be extended with continuing the exposure until the control alevins "button up". The latter will provide a longer exposure period; however, maximum exposure should be to the development stage of "yolk sac absorption or buttoning up" (terminate the bioassay).

3 Excavate the site location to a level and position that ensures the wire cage is slightly angled up current. Ensure that when the egg box is positioned inside the wire cage, it is level with the stream bed-water interface. Ensure that the location will always have water flowing over the eggs.

4 Place the egg box in the middle of the wire cage and add clean spawning size gravel. (Customized neoprene divers gloves work well for holding the egg box in place while gravel is poured into the cage.)

5 Close the wire cage and seal it with wire or nylon zap straps once the egg box is totally covered with gravel. Use a minimum of 3 boxes per site.

6 Measure field parameters such as temperature, dissolved

oxygen and pH each time the eggs are checked. Record water flow rates and climatological factors. Place control boxes in conditions (temperature, depth, light) as similar to test boxes as possible.

7 Designate one cage at each site as the "check cage". This cage should be the only one observed during the weekly monitoring of the study. When checking these eggs, shield them from direct sunlight. The checking should be conducted as quickly as possible. If a longer time (10+ minutes) is required, keep eggs moist.

8 Record mortality and any other pertinent observations in field note book.

10.2 PROTOCOL FOR IN-SITU CAGED FISH BIOASSAYS

Overview

Under certain conditions, it is possible to use caged fish to determine if deleterious effects are happening in receiving waters. The deployment of caged fish into fresh and marine waters will usually only provide the investigator with a measure of mortality. The species of fish exposed must be relevant to the site's environment, they can be from indigenous or cultured stocks. Various species of salmonids are available, the age and size of the salmonids is often seasonal and species dependent. There are also private trout farms that will provide stocks.

Sources

British Columbia MWLAP (2003)

At a glance

1 Transport fish in clean and disinfected containers (i.e., Wescodyn or Rocol) that can be sealed. Provide a portable compressed air system or bottled oxygen when traveling any great distance. Temperature will also play an important factor in the summer months during transit.

2 Cool using de-chlorinated ice blocks. The fish supplier should provide you with a statement regarding the stocks' origin and any disease treatments they have undergone.

3 Ensure the cage is capable of sustaining fish for the duration of the exposure. The cage should allow adequate flow but ensure the fish can not escape.

4 Position and secure cages prior to adding the fish. The control location should resemble the sampling location with regard to flow rate, geography, depth, etc. In swift flowing water, position cages in back eddies or side pools, so fish are not under constant current swimming stress. Try to position cages out of direct sunlight. Cage floats must be brightly colored to avoid navigation hazards for boaters.

avoid direct sunlight

5 Transport fish to the cage site in a sealed bucket to prevent loss. Do not overcrowd the fish in the bucket. The number of fish added to each cage is dependent on size and mass. Count and gently add fish to the cage. If there is a temperature gradient difference greater than three degrees from the field location to transportation water, slowly add upstream water to acclimate the stocks over a 1-hour period.

do not overcrowd fish

6 Sacrifice a representative number of test fish from the general test stock to measure length and weight. The potential for histological comparison is also a possibility, particularly using gill structures.

7 Record field parameters such as DO, pH, conductivity, salinity, and temperature and estimate flow if possible.

8 Establish a feeding schedule if testing will exceed four days. Use yearling fish for long term exposure studies.

11.0 PROTOCOLS FOR SAMPLING MACROPHYTES

11.1 PROTOCOL FOR SAMPLING MACROPHYTES IN LAKES

Overview

These methods represent an amalgam of elements from various approaches. Aquatic macrophytes are sampled to: inventory species (presence/absence), identify invasive species, for biodiversity studies and aquatic health assessments, for primary productivity assessments, and bio-monitoring to determine the effects of environmental change or anthropogenic stressors. Field studies may be qualitative or quantitative in nature and appropriate survey methodology is typically selected on the basis of project-specific objectives. Generally, the whole plant should be collected for taxonomy. Some species groups can only be identified by mature fruits or flowers. Small plants like the duckweeds do not make acceptable pressed and dried specimens. Therefore, small screw cap vials make good collecting and preservation containers.

The sampling protocols are applicable to wetlands, ponds, lakes, reservoirs, and large river surveys. Consideration must also be given to the type of water body (i.e., lotic versus lentic, size of water body or study area, littoral extent, and depth) and the nature of the aquatic plant communities to be sampled (see Table 5).

OBJECTIVE	METHODS	DESCRIPTION
Reconnaissance	Surface Inventory	Qualitative
Species Inventory/Biodiversity	Surface Inventory	Qualitative
	Point Intercept	Qualitative/ Semi Quantitative
	Line Intercept	Qualitative/ Semi Quantitative
Biomass/Productivity/ Bio-Monitoring	Transect with Quadrat	Quantitative

Table 5. Summary of macrophyte methods in relation to study objectives

Field staff should be familiar with regional aquatic macrophyte species and the use of plant identification keys. Plants fall into three generalized categories:

• *submergent* - entire plants submerged (Photo 20);

• *floating-leaved* - plants with submerged parts and leaves that float at the surface (Photo 21); and

• *emergent* – plants with erect parts (stems and leaves) that rise above the water surface (Photo 22).

Within all three categories, all rooted vascular plants should be considered. Macro-algae (i.e., *Chara* sp. and *Nitella* sp.) are similar to vascular aquatic macrophytes in size, form and function, and should be treated the same. Filamentous algae, aquatic mosses, and free-floating vascular plants (e.g., *Lemna* sp.) should be recorded when present, but quantification is subject to specific study design. Identify plants in the field whenever possible, but also be knowledgeable in the preparation and preservation of aquatic macrophytes for office identification, or if need be submission to a qualified plant taxonomist. Specific study designs may also require retention of reference collections. Be aware of invasive/exotic, rare and endangered species. It is also important to be able to identify invasive, rare or endangered species.

When possible conduct surveys during the peak growing season (i.e., mid-summer to early fall). There is the likelihood that surface inventories or other reconnaissance surveys may be conducted outside of the peak growing season (if plant growth has progressed enough to permit determination of bed extent and species identification). Many aquatic macrophytes are difficult to identify prior to the development of inflorescences or seed stages.

Sources

British Columbia MWLAP (2003), Alberta Environment (2006 a), Développement durable, Environnement et Parcs, Gouvernement du Québec (2007)



Photo 20. Example of submergent macrophytes (Source: Richard Carignan, University of Montreal)



Photo 21: Example of floating-leaved macrophytes (Source: Développement durable, Environnement et Parcs, Gouvernement du Québec (2007)).



Photo 22. Example of emergent macrophytes (Source: Développement durable, Environnement et Parcs, Gouvernement du Québec (2007))

11.2 PROTOCOL FOR MACROPHYTE SURFACE INVENTORY

Overview

Surface inventories provide a qualitative method of collecting data for production of plant species or community distribution maps. The end products for a surface inventory include a map showing the distribution of plant bed types, a list of species for each plant bed type and the water body or study area as a whole. In many cases, surface inventories may serve as reconnaissance surveys. Surface inventories are adequate to document gross changes in community structure or the extent of plant beds over time. Surface inventories can also serve as the initial step in supporting more intensive aquatic macrophyte surveys.

Sources

British Columbia MWLAP (2003), Alberta Environment (2006 a), Développement durable, Environnement et Parcs, Gouvernement du Québec (2007)

At a glance

determine littoral zone

1 Perform a preliminary determination of the littoral zone (the shallow, shoreline, regions of a water body where light penetrates to the bottom permitting colonization by rooted aquatic macrophytes and benthic algae). Small or shallow water bodies may be littoral throughout, while large or deeper water bodies may be littoral only around the margins or in shoal areas. Maximum depth of aquatic macrophyte growth is usually limited by light penetration (i.e., the euphotic zone) but may also be limited by other factors such as slope and substrate type. In rivers, aquatic macrophyte growth is often limited by substrate type and flow velocity, and plant beds are usually restricted to river margins.

2 Survey littoral regions around lake shores or along river banks by navigating the boat in a zig-zag pattern (Figure 21); from shallow near-shore waters out to the extent of plant beds. Pattern density (i.e., distance between passes) is dependant on visibility but should allow complete coverage for visual assessment. Survey shoal areas with aquatic plant growth separately, and do not survey shorelines without plant growth.

3 Survey shallow water bodies with littoral plant growth throughout in a grid pattern. Ensure the grid density is dependent on study design, the area to be surveyed and time constraints.

4 Employ GPS tracking feature (if available) to provide an accurate record of the survey pattern and the area traversed. Record all key features such as, plant bed boundaries or transitions from one plant community type to another and UTM GPS waypoints, Describe key features in a notebook or field sheets.

information to record

5 Record water depth, Secchi depth, turbidity, and bottom light level (if equipment is available) at all key feature waypoints. Record GPS coordinates periodically at representative sites within plant beds. Record water temperature and water profiles

at several shallow and deep sites.

6 Identify and record all plants found within beds. For a qualitative inventory survey, record presence of plants only.

7 In shallow water with adequate visibility, identify plants by observation from the boat. In deeper or murkier water or where a canopy of plants obscures plants at lower levels, use an underwater viewer.

8 Collect plant samples at intervals at each plant bed with the rake sampler for closer examination. Identify plants on-site or retain them for identity verification at a later time. Place collected plants in a sealable plastic bag along with a label providing all pertinent information. Record sample collections in a note book or on field sheets along with all pertinent site information and GPS location.

9 Obtain supplementary information from the very shallow near-shore waters from the shoreline or by wading into the water.

10 Ensure all samples are properly preserved in a plant press. Samples will be archived or included in reference collections

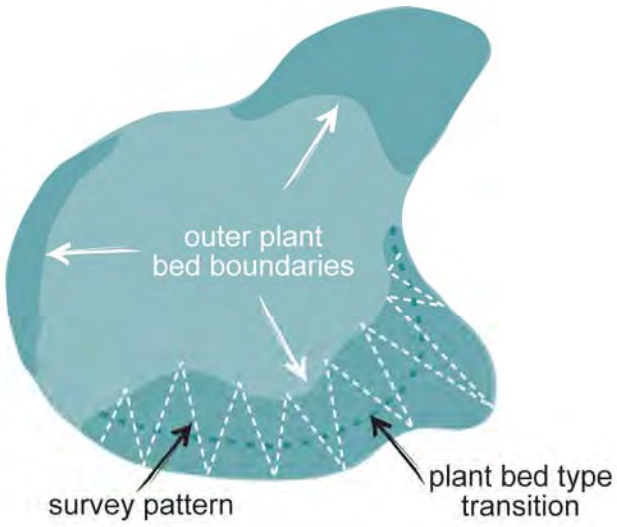


Figure 21. Example of a possible survey pattern for a surface inventory conducted on a small lake (Alberta Environment (2006a))

11.3 PROTOCOL FOR POINT INTERCEPT MACROPHYTE SURVEYS

Overview

Point Intercept surveys are conducted by sampling for aquatic macrophytes at regularly spaced, pre-selected points in a grid pattern. The survey data can be used to identify and delineate plant communities or bed types. The end products for a qualitative Point Intercept survey include a map showing the distribution of plant bed types plus a list of species for each plant bed type and the water body or study area as a whole. Conduct surveys over an entire water body or a discrete area within a water body, but either way survey an entire study area without reliance on subjective site selection in the field. Determine the grid node (i.e., sampling site) coordinates manually from maps, or if possible generate these with the aid of GPS or GIS software packages.

Sources

British Columbia MWLAP (2003), Alberta Environment (2006 a), Développement durable, Environnement et Parcs, Gouvernement du Québec (2007)

At a glance

1 Navigate to each pre-selected point in a regular pattern. Sample sites located in shallows by wading.

2 Record at all sites, water depth, Secchi depth, turbidity and bottom light level (if equipment is available). Within the study area record water temperature or profiles at several shallow and deep sites.

3 Record the species present at each sampling site based on observation from the boat. Use an underwater viewer and rake sampling to obtain supplementary information.

4 Identify plants on-site or retain them for later identification. Place collected plants in sealable plastic bags along with a label providing all pertinent information. Record sample collections, a sample number, all pertinent site information, and GPS location in a note book or field sheet.

properly preserve

5 Properly preserve in a plant press samples to be archived or included in reference collections.

Obtain semi-quantitative results by modifying the study design and field sampling procedure as follows:

1 Conduct sampling at each sampling site in a consistent manner and level of effort. At each site, make the same number of rake drags/tosses and, if possible sample an equivalent area with each drag or toss.

2 Determine and record the relative robustness of plant growth at each site. Include descriptors such as Dense, Moderate, Sparse and Trace.

3 Identify the species present and estimate the relative proportion of each species for each rake sample. Record species

that are present in very small amounts, perhaps only as fragments, as ‘present’ or ‘trace’ only.

11.4 PROTOCOL FOR LINE INTERCEPT MACROPHYTE SURVEYS

Overview

The Line Intercept method uses a system of transects that representatively encompass all aquatic macrophyte community types within a water body to derive a qualitative description of those communities. Use the survey data to identify and describe plant communities or bed types. Use a study area reconnaissance in combination with a number of representative survey transects to facilitate a reasonable qualitative description and delineation of bed types and distribution. The end products for a qualitative Line Intercept survey include a map showing the distribution of plant bed types plus a list of species for each plant bed type and the water body or study area as a whole. Transects are generally laid out perpendicular to the shore. Line Intercept surveys are most effective where plants are readily visible from a boat, generally less than 1-2 m of depth.

If the littoral zone extends to greater depths Line Intercept surveys may be conducted using a snorkeler or diver, although such surveys are more difficult to conduct. If divers are used, they should be familiar with *in-situ* identification of aquatic macrophytes.

Sources

British Columbia MWLAP (2003), Alberta Environment (2006 a), Développement durable, Environnement et Parcs, Gouvernement du Québec (2007)

Special safety concerns

Divers must be certified (e.g., PADI, NAUI, or equivalent) and familiar with accepted safe diving practices and any employer policy.

At a glance

Qualitative surveys

identify all vegetated littoral areas

1 Conduct a preliminary reconnaissance survey (e.g., Surface Inventory) to identify and delineate all vegetated littoral areas within the water body or study area. The number of transects required will vary from site to site and will be according to study design. Stratified sampling designs are usually suitable.

2 Prepare a transect line marked at 1 m intervals with fluorescent flagging tape. Use of alternate colours at the 5 m and 10 m intervals simplifies tracking along the transect line. The transect line should be of a set length (e.g., 100 m), appropriate for the size of the water body or plant beds likely to be encountered. The line length may also equal the distance between end points in studies with permanent transects.

3 Secure the transect line at both ends by attaching to poles or

to anchor lines.

4 Conduct surveys by navigating the boat along a transect line and recording all species occurring along individual line segments. Plants are deemed present if they intersect the vertical plane between the transect line and the bottom.

5 Wading is an option in very shallow near-shore waters. Use an underwater viewer in deeper or murkier water, or where the top canopy of plants obscures plants at lower levels. Use rake sampling to collect samples for observation or reference collection.

6 Record water depth at each end of the transect line and at interval markers, record GPS waypoints, Secchi depth, turbidity, and bottom light level (if equipment is available) at each end of the transect line and at intervals along the line (e.g., at important transitions). Record water temperature or profiles at several shallow and deep sites within the study area.

information to record

7 Identify plants on-site or retain them for identity verification at a later time. Place collected plants in sealable plastic bags along with a label providing all pertinent information. Record sample collections in a note book or on field sheets, along with a sample number, all pertinent site information, and GPS location.

8 Properly preserve samples in a plant press. Samples will be archived and/or included in reference collections.

Semi-quantitative surveys

1 Select transect locations on a stratified-random basis, ensuring that all strata (i.e., bed types or geomorphically similar units) are equitably represented.

2 Conducting semi-quantitative sampling at 1 m intervals is likely to be time consuming. Select larger intervals (e.g., 5 m or 10 m), or base sampling site selection on changes in bed type or a geomorphic characteristic(s) such as depth or substrate type.

3 Conduct sampling at each sampling site in a consistent manner and with a consistent level of effort. Use the same number of rake drags or rake tosses and, if possible, sample an equivalent area with each drag or toss.

4 Determine and record at each site the relative robustness of plant growth. Use descriptors such as Dense, Moderate, Sparse and Trace.

5 Identify the species present and estimate the relative proportion of each species in the sample for each rake sample. Record species present in very small amounts, perhaps only as fragments, as ‘present’ or ‘trace’ only.

11.5 PROTOCOL FOR TRANSECT WITH QUADRAT MACROPHYTE SAMPLING

Overview

Determining biomass is a quantitative assessment that requires considerably greater effort than qualitative assessment of aquatic macrophyte communities. Quantification of aquatic macrophytes is based on stratified-random sampling designs requiring at least a basic understanding of water body geomorphic conditions, the nature and distribution of plant community types. Biomass studies are usually impractical in large water bodies because of the effort involved and are typically limited to smaller ponds or discrete portions of lakes and rivers (e.g., bays or reaches).

Sources

British Columbia MWLAP (2003), Alberta Environment (2006 a), Développement durable, Environnement et Parcs, Gouvernement du Québec (2007)

At a glance

1 Select transect locations on a stratified-random basis, ensuring that all strata (i.e., bed types or geomorphically similar units) are equitably represented.

2 Pre-select or field-select sampling sites provided that they conform to study design protocols.

3 Conduct sampling at each sampling site in a consistent manner and with a consistent level of effort. Determine the appropriate number of replicate samples collected at each site from the study design.

consistency

4 Drop or throw the quadrat in a random manner and allow it to sink to the bottom at each site.

5 Use a diver to harvest all the plants rooted within the quadrat. Cut plants at the water/substrate interface and place the entire plant in a mesh bag. If the roots are to be collected, they should be dug out of the substrate and rinsed before being placed in the bag.

6 Bring plants to the surface and transfer them to a plastic bag along with a label providing all pertinent information. Record sample collections in a notebook or on field sheets, along with the sample number, all pertinent site information, and GPS location.

7 Record water depth at each site as well as GPS waypoints, Secchi depth, turbidity and bottom light level (if equipment is available). Record water temperature or profile at several shallow and deep sites within the study area.

8 Sort plants from each sample by species as soon as convenient. Include whole plants and plant fragments, but exclude senescent plants.

dry to remove surface water

9 Spin each species in a centrifuge dryer to remove all surface water. Weigh plants to determine the ‘fresh’ weight for each species within the sample. Record total weights for each species. Re-bag the plants for further analysis or discard them if no

longer needed.

10 Retain representative samples for each species for verification of species identification. Record sample collections in a note book or on field sheets, along with a sample number, any pertinent site information, and the GPS location.

11 Properly preserve in a plant press samples to be archived or included in reference collections. Express biomass, or standing stock, as *fresh weight of each species g/m²*, and *total fresh weight g/m²,* or as *dry weight g/m²*. Use the detailed procedures for determining fresh weight and dry weight from the following points.

12 Place an individual sample into the centrifuge dryer (e.g., salad spinner) ensuring that any rocks, sticks, and detritus are removed. Centrifuge the sample for approximately one minute at a moderate speed (approximately one revolution per second). Spin samples until all the surface moisture has been removed. Remove and weigh on an electronic balance or with a spring scale in a plastic bag (subtract the bag weight). Record the weight.

oven-drying method

13 To use an oven-drying method, wash the sample using a sieve tray to remove rocks, debris, and invertebrates. Place each sample on a pre-weighed oven pan. Label it and place it in an oven at 105° C for 24 hours. After 24 hours, remove and weigh the sample on a balance (remember to subtract the pan weight). Record the weight.

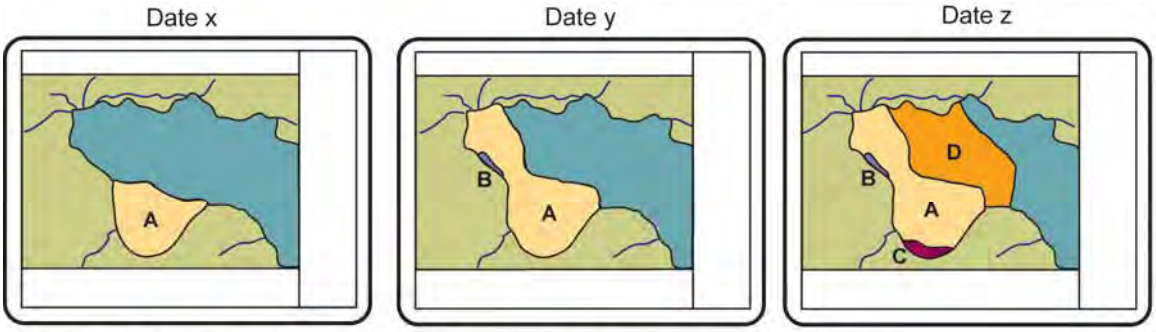


Figure 22. Example of use of aquatic macrophyte mapping through time
(Source: Développement durable, Environnement et Parcs, Gouvernement du Québec (2008b))

11.6 PROTOCOL FOR SAMPLING MACROPHYTES IN RIVERS AND STREAMS

Overview

The methods described in this section use techniques outlined for lakes and apply them to rivers and streams.

Sources

Alberta Environment (2006 a), Développement durable, Environnement et Parcs, Gouvernement du Québec (2008 b), British Columbia MWLAP (2003).

At a glance

Routine sampling in large rivers

benchmark as reference

1 Establish a benchmark on shore to serve as a reference. Record UTM GPS coordinates for the benchmark. Use the same benchmarks if surveys are repeated. Measure out to the desired site or depth and record GPS coordinates. Take photographs to illustrate the sites and macrophyte growth.

2 Note the species present, relative abundance (%) of each and growth robustness.

3 Drop the quadrat in a random manner. Remove all rooted plants from within the quadrat, allow plants to drain then transfer to a labeled plastic bag.

4 Take the following measurements at each point as required: depth, light readings (surface, sub-surface, mid-point, bottom), velocity measured when >1m depth at 0.2 and at 0.8 of depth, and when <1m at 0.6 of depth.

5 Record water temperature and all pertinent sampling information (date and time of sampling, GPS location, sample numbers, photo reference numbers).

6 When taking replicate or additional samples or when returning to the same site, move upstream to avoid sampling the same area twice in the same season.

7 Follow the methods noted above for lakes when plant weights are required.

8 Properly preserve in a plant press samples to be archived or included in reference collections.

Peak-growth sampling in large rivers

1 Sample 10 random points at each site (5 right bank, 5 left bank) in the area of highest biomass (details may vary with study design).

10 random points

2 Drop the quadrat in a random manner at each marked site. Note the species present and relative abundance (%) of each; and growth robustness and use descriptors of robustness as Dense, Moderate, Sparse and Trace. Take photographs to illustrate the sites and macrophyte growth.

3 Collect plants rooted within each quadrat in separate pre-labeled bags.

4 Take the following measurements at each point as required: depth, light readings (surface, sub-surface, mid-point, bottom), velocity measured when >1m depth at 0.2 and at 0.8 of depth, and when <1m at 0.6 of depth.
5 Record water temperature and all pertinent sampling information (date and time of sampling, GPS location, sample numbers, photo reference numbers).
6 Do weight determinations as outlined for lakes.

Transect sampling in small rivers

1 Select a representative 250 m reach of river.
2 Select five transects at 50 m intervals. Measure total width at each transect. Divide total width by 11 to obtain 10 sampling points.
3 At each sampling point, measure the depth. Using the quadrat, determine the first and second dominant substrates, macrophyte percent coverage and macrophyte algae percent coverage, according to the following:

Substrate Categories:
Silt and Sand < 2 mm
Fine Gravel 2-16 mm
Coarse Gravel 16-64 mm
Cobbles 64-256 mm
Boulders > 256 mm

Percent Coverage Categories:
Absent 0%
Sparse 1-30%
Moderate 30-60%
Dense 60-100%

4 Determine relative cover for species across transect.
5 Choose two sampling points at each transect for macrophyte collection using a random number table.
6 Collect all macrophytes using a quadrat as described previously. If no macrophytes are present within the quadrat, record “0” in field notes, and select a third random number for macrophyte collection.
7 Remove with 5% acetic acid prior to spinning (optional) if $CaCO_3$ is present.
8 Spin macrophytes one minute or until all surface water has been removed.
9 Determine weights as discussed for lakes.

11.7 PROTOCOL FOR MACROPHYTE TAXONOMY

Overview

Collect the whole plant. Some species groups cannot be identified without mature fruits or flowers. Press large plants and mount on a 30 cm by 40 cm white card that is dimensionally stable when wetted. Use small screw cap vials (good collecting and preservation containers) for small plants like the duckweeds as they do not make suitable pressed and dried specimens.

Sources

British Columbia MWLAP (2003)

At a glance

Small floating species collection

1. Scoop a few individual plants into a pre-labeled vial.
2. Preserve the specimens in a solution of 70% ethanol, 25% water and 5% formalin.
3. Submit these specimens to a herbarium where they will be identified to species and stored for future reference.

Large emergent or rigid plants for taxonomic purposes

1. Before placing the plants onto the card (cannot write on the card once wet), record field notes directly onto the card stock. Write the notes in pencil in the lower right hand corner of the card where it can later be covered by the permanent label.
2. Collect an entire specimen and store it until conditions are appropriate to mount. **Do not leave plants out in the sun even briefly as they will wither very quickly and become useless as specimens. Do not submerge emergent plants, but keep them in a bag with a little water in the bottom to maintain high humidity. Keep each species in its own bag. Samples from one site should be organized by bagging the individual bags from one site together in one large (garbage) bag.**

proper storing

3. To mount each specimen, lay the plant on the card stock with the roots in the bottom left corner (fold over the top if it is too tall to fit).
4. Spread out leaves and flowers, turn some over so the bottoms can be seen, and try to make a neat and tidy specimen that covers the whole sheet. **For small plants, fill the sheet with more specimens from the same clump or clone to show as much variability as possible.**
5. Collect the seeds into small paper or cellophane pouches and attach these pouches to the finished herbarium sheet (for fruiting plants where the seeds may be shed on drying).
6. Place a piece of heavy blotting paper on top of the specimen to help dry the plant quickly after mounting the aquatic plant on the card stock.
7. Wrap the card stock, plant, and blotter in a newsprint folder. The newsprint should be 30 cm by 90 cm in size and folded in

half to form a folder in which the mounted plant is placed.

8 Once several of these wrapped packages (each containing one card stock/specimen) have been accumulated, place them into a plant press with a piece of corrugated cardboard separating each package. The corrugations should run in the same direction so that air flow through the press is facilitated.

9 Dry within several days to prevent fungal growth and minimize rotting of specimen. This will also preserve colours and shapes as much as possible. If in a laboratory or herbarium the same day, the plant presses may be dried in a proper plant drier or a forced draft oven at 40°C. In the field, use motel hot air registers, baseboard heaters, or hair dryers to move warm air through the corrugated cardboard. If the weather is dry, secure the plant press on the roof of the truck and allow air to blow through the corrugated cardboard as you drive from site to site. As the plants in the presses dry, it will be necessary to re-tighten the presses at least daily, to maintain the pressure and hold the plants flat.

dry within several days

10 These specimens must be submitted to a herbarium where they will be identified to species and stored for future reference.

11.8 PROTOCOL OR MACROPHYTE TISSUE ANALYSIS

Overview

Plant tissues may be collected for analyses of metals, pesticides, nutrients, plant products, for dry weight/wet weight ratios, or for other laboratory analyses. In all cases an entire, intact, voucher specimen of each species should be collected and filed in a herbarium as a record of what was analyzed.

Sources

British Columbia MWLAP (2003).

Special safety concerns

Always wear gloves when handling dry ice.

At a glance

1 Collect entire specimens, keep them submerged and covered until they can be processed (plants should never be allowed to desiccate).

2 Place each specimen in individual airtight bags (e.g., Ziploc-type bag), tissue cups or glass bottles (for analysis of trace organics). Ensure specimen container is fully labeled. Ensure that the quantity of tissue and the container type are appropriate for the analysis that will be conducted.

3 Place the sample container in the required cooler for shipping (some analyses need to be frozen; therefore, these samples will be placed in a cooler containing a sufficient quantity of dry ice).

12.0 PROTOCOL FOR BIOFILM SAMPLING

12.1 PROTOCOL FOR BIOFILM SAMPLING

Overview

Biofilm can be defined as the largely biotic community attached to rocks and cobbles of a stream or lake, largely made up of periphyton with associated invertebrates, zooplankton, and usually some abiotic material. This material is indicative of the productivity of a stream, and due to its integrative capacity (high organic carbon) can be used to measure the degree of organic contamination. Qualitative and quantitative sampling methods for biofilm exist. In rivers and streams, benthic algal communities typically account for most primary productivity. Benthic algal communities living on substrate surfaces are collectively referred to as periphyton. Sampling protocols in this section are concerned with the quantitative assessment of two kinds of periphyton; epilithic periphyton that are attached to the surfaces of rocks or other objects projecting above stream bottom, and episammic periphyton that are associated with sand. There are two main components to this type of sampling:

- location of the sampling points along a transect in the stream or river, and
- collection of periphyton from the substrata.

Sources

Environment Canada (1999), British Columbia MWLAP (2003), Alberta Environment (2006 a)

Special safety concerns

Don't attempt to lift rocks that are too heavy and don't enter water that may pose a threat to your safety. Watch your footing while returning to shore with the rock.

At a glance

Qualitative method

1 Collect a number of submerged rocks from the river cross-section, and scrape the biofilm with a pre-cleaned (soap and water, acetone then hexane) knife or spatula into appropriate sample containers (disposable gloves should be worn).

minimal to substantial effort

2 Collect appropriate ample volumes according to the study design. The amount of effort to collect 40 mL of material can vary from minimal (5-8 rocks) to substantial (20 rocks) depending upon the productivity of the stream, time of year, sunlight/shading, etc.

3 Cool or freeze the sample (depending on the analytical requirement).

Quantitative method

method to select rocks

1 Randomly select rocks to represent the variation in biofilm growth present at the sample location (i.e. they should not be chosen to maximize the sample size as in the case of the qualitative sample). A method to select rocks is to collect the

rock closest to the left foot after a predetermined number of paces are taken through the cross-section, and to continue this process until all necessary rocks are collected.

2 Collect samples by placing a 5 cm diameter template over a randomly selected submerged rock, scribing around the circumference of the template, and scraping the biofilm material from within the scribed area into a sample container (usually a Whirl-pak bag). Repeat this process for three randomly selected rocks to produce a single sample, which is immersed in a small quantity of river water. Triplicate the process.

Chlorophyll-a sampling

1 Rocks to be sampled for periphyton should be sampled across a transect extending the width of the watercourse unless the river is too deep. This can either be an imaginary transect or a defined transect. A transect can be defined in smaller watercourses by:

- selecting a reference point in the middle of the site and driving a peg into the ground on one of the banks,
- attaching a tape measure to the peg and laying it out taught across the watercourse. Anchor the far end with the second peg (other bank), and
- divide the stream width into equally spaced intervals according to the number of rocks that are to be sampled (consult with the project manager).

2 It is important to be random in the rock selection. Wade along the imaginary transect out from shore (a rope can be stretched across the river). Taking 2 steps select a rock (minimum size of 5 cm diameter) from approximately a 40 cm depth. Long arm gloves can be worn for this. For the defined transect, wade out to the first marked point and without looking, pick up a stone. If the stone is <5 cm diameter or a sandy, silty areas between cobbles is touched, then take the nearest stone that is > 5 cm diameter.

random rock selection

3 All the stones may be collected at once or individually.. Place the stone(s) on a white tray with a small amount of stream water and return to the stream bank.

4 If the river becomes too deep, head upstream repeating the above steps until all rocks are collected.

5 Orient each rock as it was in the river, and place the 4 cm^2 template over the area (chosen randomly) to be scraped. Only take a 2 cm^2 scrape per rock when the algae is really thick (instead of a 4 cm^2 scrape per rock). Remember to note this on the field sheets and labels. If the algae is extremely thick, a diagonal section of the template can be scraped, ensure the area is recorded.

thickness of algae

6 Using a scalpel, completely scrape off the algae found inside the appropriate template.

7 The number of rocks and number of replicates collected will

depend on the river and project (consult the project manager). For example, scrapes from three rocks have generally been combined onto one filter. Three filters can be submitted per site. This should be pre-defined by the project manager prior to the sampling trip.

consult project manager

8 Alternatively, pour a small amount of de-ionized water over the freshly scraped algae (on the rock), this will form a slurry. Remove the slurry from the stone using a disposable pipette or a turkey baster, and transfer it to a 250 mL dark Nalgene bottle. Rinse the scalpel with de-ionized water into the Nalgene bottle to ensure transfer of any residual algae. When all the rocks in a sample are scraped, add 10-15 mg powdered $MgCO_3$ to the bottle. Add double distilled/deionized water for an approximate total volume of 25 mL. Label the bottles with the total area of scrape contained in the sample, site, date, and "epilithic chloro". Store the Nalgene container at 4°C and transport to the laboratory within 24 hours.

transport to laboratory within 24 hours

9 If the alternate method was not used on #8 above, place the algae from the scalpel directly onto a GF/C filter.

10 Apply a light sprinkling of powdered $MgCO_3$ to the material on the filter once all necessary rock scrapes for the replicate are completed.

11 Wrap the filter in the aluminum foil in a way that the analyst can easily unwrap it to get at the filter and so that material doesn't come off on the foil.

12 Label the wrapper with site, date, "epilithic chlorophyll", and the total area of scrape that it contains in cm^2 (e.g., three rocks x 4 cm^2=12 cm^2).

13 Repeat the process for the other groups of rocks.

14 Put the samples in a Whirl-pac or Ziploc bag and store on regular or dry ice (at -4°C).

15 Place the samples in the laboratory freezer when you return from the field.

16 Ship frozen samples to the laboratory every week for extraction.

Air-dried weight and species identification sampling

1 Follow the procedures outlined for chlorophyll-a for collection of samples. For example, pool scrapes from three rocks into a small jar for analysis of air-dried weight. Take species identification from the same number and sub-set of stones (e.g., pool scrapes from two into scintillation vial containing 10 mL of de-ionized/RO water).

2 Add 2 mL of Lugol's solution to each vial.

3 Line the scintillation vial cap with Parafilm prior to sealing the vials.

4 Label each vial with site, location, date, area of scrape, and sampler's initials.

5 Store vial in the dark.

Sampling clean-looking but slimy rocks

1 Follow the rock sampling instructions described above for the template sampling technique for chlorophyll-a (steps 1-4).

2 Collect the number of rocks and number of replicates according to study design.

3 Select a rock and affix the collar over an area of rock that was oriented upward in the stream.

4 Use an artist's brush to physically rub the area of rock within the collar area, to dislodge the slime.

5 Use a small amount of water to produce a slurry within the collar that can be transferred using a turkey baster or poured into a 1 L dark Nalgene bottle. Use a funnel to avoid spillage during pouring. Use a squirt bottle to rinse the slurry thoroughly from the collar, baster, and brush into the dark bottle. Try and use a minimal amount of water.

6 Repeat this process for three rocks ensuring enough slurry is obtained. Shake some $MgCO_3$ into the bottle (optional), store bottle (properly labeled with site, date, area sampled by collar multiplied by the number of rocks) in cooler until such time as sample can be filtered (not more than 24 hours later), set up the filter apparatus with GF-C filter, rinse filter, and proceed to filter the slurry through the apparatus. Rinse bottle adequately and filter to ensure all slurry is obtained. Cover the filter with powdered $MgCO_3$ (optional), fold the filter in quarters, place in aluminum foil, and label with date, location, site number, total area of rock sampled, and sampler's initials.

filter within 24 hours

7 If too much slurry is obtained, a sub-sampling procedure may be used by mixing the slurry in a shallow graduated cylinder, and then draw up 10 mL of well-mixed slurry into the syringe (5 mL if the slurry is extremely thick).

8 Filter the slurry through a GF/C filter. Rinse the syringe with a small amount of distilled water and filter this through the same filter. Cover the filter with powdered $MgCO_3$ (optional), fold the filter in quarters, place in aluminum foil, and label with date, location, site number, total volume of slurry (using a graduated cylinder), volume of slurry filtered, and sampler's initials.

9 Put samples on ice, or freeze with dry ice and deliver to the laboratory.





Photo 23 (left). Example of flexible plastic disc (Source: Alberta Environment (2006))

Photo 24 (right). Epicollar (Source: Alberta Environment (2006))

12.2 PROTOCOL FOR BIOFILM SAMPLING – SAND-CORING METHOD

Overview

The sand coring method is used to quantitatively sample episammic benthic algae for chlorophyll-a or biomass determination. Some watercourses or sections of watercourses have sandy or silt substrates, these environments support communities of episammic algae. The template method is not appropriate for these soft substrates because algae are not attached to a defined surface: rather the algae are intermixed with the upper sediment layers. Coring techniques are far more effective to quantitatively sample algae from the upper layers of soft substrates.

Sources

Environment Canada (1999), British Columbia MWLAP (2003), Alberta Environment (2006 a)

At a glance

1 Place a clean Plexiglas liner in the barrel of the corer until the o-ring fits snugly.
2 Push the corer into the substrate and affix a rubber stopper to top of the tube.
3 Lift up the corer, but before it breaks the water surface place a cap on the bottom of the liner.
4 Remove the liner from corer and place a cap on top of it.
5 Remove the bottom cap and quickly place the liner on the core extruder and remove top cap.
6 Carefully push the liner down; this will dispel the overlying water.
7 Place the core slicer on top of the liner and push the core up into the slicer until the required depth of core is obtained.
8 Slice off the core and transfer it to a glass filtering apparatus equipped with a GF/C filter.
9 Gently (7 psi or 48 kPa) vacuum the core until dry.
10 Add 2 mL of saturated $MgCO_3$ per core (optional) and vacuum to remove water.
11 Carefully place the filter and core material in a 300 mL Nalgene container.
12 Rinse (with acetone) any remaining material on the funnel into the Nalgene container. Add approximately 25 mL of acetone for each core.
13 Shake the core/filter/acetone mixture for 1 minute.
14 Label the Nalgene container and field sheet with the date, site, depth of water, depth of core, number of cores, volume of acetone used, and sampler's initials.
15 Cool to 4°C and transport to laboratory.

13.0 PROTOCOL FOR PHYTOPLANKTON SAMPLING

Overview

Phytoplankton collection in the open water of a lake consists of surface and/or deep grab sampling. A Van Dorn bottle is the most common tool for collecting the deep samples for enumeration. In specific situations a net may be used as well. Care must be taken with net collection, numerous species can pass through even the smallest mesh sizes, colonies can be disrupted by the net, and fragile species may burst from excessive pressure.

Sources

British Columbia MWLAP (2003) , EMAN (Undated a)

At a glance

Qualitative sampling

1 Use a 10-µm Nitex® mesh or similar phytoplankton net that is fitted with a stopcock at the lower end to allow opening and closing. The mouth of the net has a canvas collar fitted with a metal bridle that attaches to the sampling line.

2 Lower the net to a given depth, allow it to settle for 15 to 30 seconds and then pull it slowly to the surface. Pulling the net too fast will cause a bow wave and the net will be less efficient.

3 Position the mouth of the stopcock into a sample-collecting bottle and then drain the sample. Repeat three to four times if necessary.

4 Qualitative net sampling will yield presence/absence information and can aid in the identification of rare species but is not appropriate for accurate counting or biomass estimates.

Quantitative sampling

1 **Surface Samples:** Anchor the boat at the designated sample site. Alternately, if the water is too deep or a buoy is not present, the person in the stern will have to maintain position while the person in the bow takes the samples.

2 Obtain a labeled, 1L sample bottle and remove the lid without touching the inner surface of either the bottle or lid.

3 Reach out an arm length from the boat to take the sample. Ensure that the person in the stern is providing counterbalance (working over the opposite side of the boat).

4 Sink the bottle under the surface and move it slowly towards the current (the direction the boat is facing) until the bottle is entirely full. Standard sampling depths for "surface" water samples are 0.1 m and 0.5 m.

move towards the current

5 Preserve the sample with 3 mL of Lugol's solution (3-4 mL per 1 litre of sample). A general guideline is that there be sufficient Lugol's added to adjust the color of the sample to resemble weak tea.

6 **Samples at Depth:** Open the Van Dorn sampler by raising the end seals.

7 Set the trigger mechanism.
8 Lower the sampler to the desired depth (epilimnion, hypolimnion or thermocline: the location of which should have been determined by prior DO/temperature profile data collection. Ensure that the dead end of the rope is tied to the boat.
9 Send the messenger down to “trip” the mechanism that closes the end seals.
10 Retrieve the sampler to the surface.
11 Transfer the water sample from the Van Dorn bottle to labeled, 1 L sample containers via the drain valve.
12 Preserve the sample with 3 mL of Lugol’s solution (3-4 mL per one litre of sample).
13 Recap the bottle and place in the cooler.

Other Sources

Nova Scotia Environment and Labour (1996)

14.0 PROTOCOL FOR SAMPLING MUSSELS FOR METALS AND TRACE ORGANICS

Overview

This protocol details methodology to collect indigenous species of mussels. If possible have these shipped to a laboratory for analyses or for transplanting in other areas for a specific time period.

Sources

Gulf of Maine Council (1992), Gulf of Maine Council (1992)

At a glance

Collecting indigenous mussels

1 Collect mussels from a sub-tidal (below the low water line) or low intertidal segment of the shoreline.

2 Ensure that at least one collection is timed to avoid unusual sediment re-suspension by storms or stormwater runoff.

3 Collect mussels in replicate in order to examine within site variation.

4 Collect mussels from each of four discrete areas of the sub-tidal zone (total n=200). The replicates areas should be within a 50 m section of the shore so that they represent one zone of water quality and environmental conditions.

50-60 mm

5 Ensure that all indigenous mussels are of a standard 50 to 60 mm shell length.

6 Wash all mussels to remove soft external growth, sediment, and debris using clean seawater from the collection site. Avoid damaging the byssus as this affects growth and survival of the mussel.

7 Place the mussels on a bed of seaweed or in clean containers (e.g. gallon size wide mouth glass jars) with cool packs, and transport them to the laboratory.

8 Use these mussels for analysis or for subsequent transplanting to other sites.

Transplanting mussels

1 Use four cages, each containing 50 mussels, at each site when transplanting mussels for a 60-day deployment period.

2 Mark 15 of the 50 mussels to be placed in each cage on the left posterior side of the shell using a high speed engraving tool ("Dremel"-type**).** Take care to mark the shell deep enough to be able to read the numbers on retrieval but not so deep as to penetrate the shell and injure or kill the animal.

3 Measure each numbered mussel and record the shell length to the nearest 0.1 mm using a vernier or digitaI caliper so that growth over the deployment period can be determined.

4 Place each group of mussels into separate clean containers after marking and sorting the mussels into replicate groups and hold them in a refrigerator (or a cooler with freeze packs) until deployed into their cages (23 mm x 23 mm x 23 mm

polypropylene moulded baskets). Ensure that mussels are not held out of water for more than two days.

5 Secure the lids with nylon "pull ties". Fasten the cages together with the pull ties and run the mooring line through the cages. Attach any instrumentation, such as the recording thermometers to the outside of the cage

6 Suspend the cages in the water column by means of a subsurface float (e.g. an 8" Styrofoam trawl float). Arrange the mooring gear so that cages are suspended 1 m off the bottom but at a depth that ensures that the cages are underwater at low tide. In areas with a strong current, polypropylene encased steel cable can be used for mooring lines. In addition, either 1 or 2 concrete blocks may be used as inexpensive moorings.

use adequate mooring in strong currents

7 Take precautions to prevent chafing, which can sever the mooring line from the blocks. If the current is strong, use multiple moorings holding fewer cages.

8 Check cages every 2-4 weeks depending on the site conditions. Clean cages of all fouling that would interfere with sea water exchange. Inspect all lines, fastenings and mooring blocks for chafing. Where required re-position, repair and adjust cages if necessary.

9 Retrieve mussels after the period established in the study design (typically 60 days). Clean all mussels from each of the four cages of external debris and rinse them in seawater from the site. Place the mussels from each cage in clean, clearly labeled glass containers with aluminum foil over the mouth of the jar for transport to the laboratory in coolers with freeze packs.

15.0 PROTOCOL FOR SAMPLING ZOOPLANKTON

Overview

Zooplankton are small invertebrates that float freely in the water column of lakes and oceans. Zooplankton are important as both prey and consumers in the aquatic food web. Zooplankton also act as bio-monitors because they are also highly sensitive to environmental change or disturbance in lakes. Zooplankton are sampled to provide quantitative estimates of community composition, densities and/or biomass within lakes. Zooplankton are sampled with a net (Figure 23) that has a specific mesh size (ranging from as small as 64 µm to as large as 256 µm). Zooplankton densities and species composition show spatial variability both horizontally and vertically in lakes.

Sources

Alberta Environment (2006 a), B. C. WLAP (2003), Environment Canada (1999)

Special safety concerns

Formalin is used as a preservative and is identified as a suspected carcinogen. Formalin should be used with extreme care and the MSDS should be read.

At a glance

1 Soak the body of the zooplankton net in lake water prior to use (2 minutes).

2 Rinse the net with lake water to dislodge any attached material prior to sampling.

3 Attach the zooplankton bucket: make sure the plug is in place.

4 Fill the Nalgene squirt bottle with lake water that has been filtered through the net mesh.

5 Lower the net to the euphotic zone depth making sure it stays in a vertical position. Raise the net vertically at a continuous rate of 0.5 m/s to minimize avoidance of the net by fast-swimming zooplankton.

6 Avoid sampling near sediments and macrophytes because non-planktonic species of Rotifera and Crustacea inhabit these substrates and would contaminate the sample.

avoid sediments and macrophytes

7 At the surface, rinse down the outer sides of the net, repeat two or three times with lake water. Do not splash rinse water into the net opening, or let the net drop below the surface.

8 Separate the bucket from the net, place the lower end of the bucket into an open sample jar, then remove the plug and drain the zooplankton and water into the jar. Rinse the bucket contents into the sample jar with the squeeze bottle previously filled with filtered net water.

9 Preserve zooplankton samples in either 95% ethanol or 5% formaldehyde. Formaldehyde is preferred because counting samples preserved in ethanol is difficult because of the convection currents caused by rapid evaporative losses. The

formaldehyde preservation

following approaches can be used to reduce distortion due to formalin preservation: (a) add 40 g/L of sucrose to formaldehyde solutions; (b) maintain samples at low temperature (6ºC); and (c) narcotisize with carbonated water or methanol prior to preserving in a formaldehyde-sugar solution.

10 Rinse the net and bucket with lake water between sites.

11 Record sampling location (GPS coordinates), site, date, time, samplers ID, number of hauls, and depth of haul on the jar and field sheets/book. Note the mesh size and dimensions, the fixative used, and the prevailing weather conditions in the field sheets/book. Note and record ice depth in the winter.

12 Put a few drops of glycerin into sample when back at the laboratory, before storage of sample to help to prevent the animals from sticking together.

Other Sources

EMAN Undated (d)

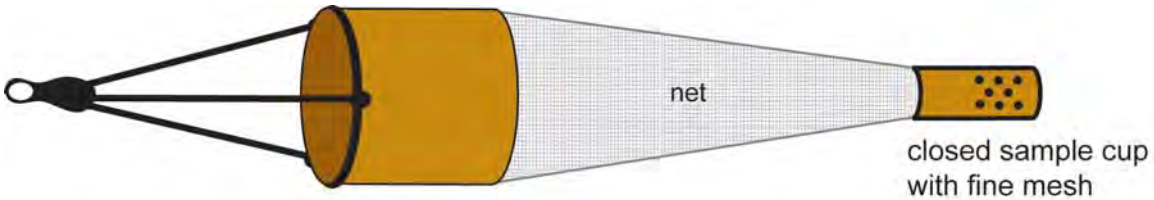
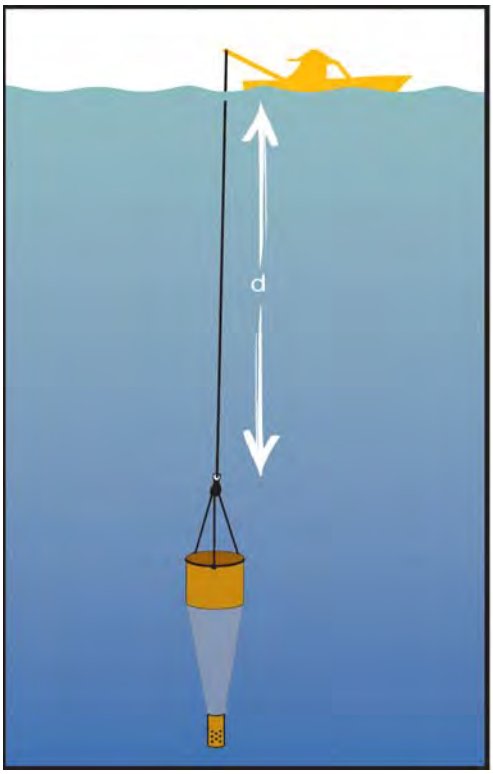


Figure 23: Zooplankton Tow Net



Volume of Water through a Zooplankton Tow = $\prod * r^2 * d$

Where: r = radius of net mouth

D = depth

$\prod$ = 3.1.416

Figure 24. Tow volume calculation

GLOSSARY OF TERMS

Acid Rinse – A process whereby equipment is rinsed thoroughly with acid, ensuring that the acid makes contact with all surfaces likely to be in contact with the sample.

Acid Soak – A process whereby equipment is soaked for a period of time (often 12-24 hours, though can be as short as 30 minutes).

Automated sampling – a system that allows samples and/or measurements to be collected at pre-determined intervals and/or times without humans physically collecting the actual measurements.

Benthos - the organisms which live on, in, or near the seabed.

Biofilm - the largely biotic community attached to rocks and cobbles of a stream or lake, largely made up of periphyton with associated invertebrates, zooplankton, and usually some abiotic material.

Bottle blanks - measure contamination from improper cleaning of bottles.

CALA - Canadian Association for Laboratory Accreditation.

Chain of custody - a form used if the project is being carried out for a legal reason (e.g., compliance monitoring). This form guarantees that the sample has not been tampered with, that only authorized personnel have handled the samples, and that appropriate field sampling techniques for the program are used. All transfers of samples are noted on the form. Transfer procedures are also described to make sure samples are properly protected and preserved. Any changes in sampling or sample storage are noted on the chain of custody form.

Composite sample – a sample composed of several sub-samples typically collected at different temporal or spatial intervals.

Deployment tubes – tubes used in automated stations to protect sensors and cables form environmental stressors or human vandalism.

Discrete or grab sample – a sample taken at one point in time.

Drift net sampler – a sampler used to collect the emerging or drifting invertebrate stages.

Drum roller – a sampler which rotates and collects the top surface layer of the water.

Ekman grab samplers- sediment samplers that are most efficient in softer sediments.

Euphotic or photic zone - is the depth of the water in a lake or ocean, that is exposed to sufficient sunlight for photosynthesis to occur. The depth of the photic zone can be greatly affected by seasonal turbidity.

Field blank samples - measure contamination from bottles, collection methods, the atmosphere, and from preservatives. Field Blanks are prepared in the same manner as a trip blank and makes the journey as a trip blank; however, the field blank sample is opened and the collection process is mimicked.

Field quality assurance program - a systematic process, involving laboratory and data recording quality assurance processes/procedures. Field Quality Assurance provides a specified degree of confidence in the data collected for an environmental survey.

Field replicates - provide precision of field plus laboratory plus environmental heterogeneity.

Filtration – passing a sample through a pre-determined filter size. The filter can be paper or glass.

Filtration blanks - used to measure contamination from the filters and the filtration apparatus.

Grab or discrete sample – a sample taken at one point in time.

Hess cylinder sampler - one of the most commonly used benthic invertebrate samplers to sample erosional substrates in streams and rivers. This sampler is suited to a range of erosional substrate types such as gravel, cobble, small boulders, and sand.

JSA - job safety analysis identifies what work will take place, lists all of the potential hazards that could be encountered during the work, and details the measures necessary to avoid or mitigate the hazard.

Kemmerer sampler – a sampler used for lake sampling > 1 m in depth.

Meiofauna - defined as microscopic animals that pass through 500 μm screen but are retained by a 64 μm screen.

Microbial source tracking - a specialized area of determining the source of bacteriological contamination.

MSDS - material safety data sheets provide detailed hazard-precautionary and first aid treatment information for controlled substances. MSDS provide important information on the hazardous ingredients, physical data, fire and explosion hazard, reactivity data, health effects, preventative measures, first aid measures and preparation information.

Multi-sampler – a sampler that collects several sample containers at one time thereby ensuring that the same mass of water is collected for all analyses at the same time.

Neill cylinder sampler - one of the most commonly used benthic invertebrate samplers to sample erosional substrates in streams and rivers. This sampler is suited to a range of erosional substrate types such as gravel, cobble, small boulders, and sand.

Package tests – a large number of variables measured in a laboratory for a fixed price, instead of having analyses completed for individual variables.

PAR – photosynthetically-active radiation is a slightly narrower band of radiation (400 – 700 nm) than visible light, and is the area of the spectrum used by plants. The measurement of PAR profiles is undertaken to measure PAR attenuation with water depth.

Parafilm - self-sealing, moldable and flexible film.

PFD - personal flotation device that allows you to float when in the water.

Ponar grab samplers – sediment samplers that are most efficient at sampling harder sediments.

Proficiency testing - the use of inter-laboratory comparisons to determine the performance of individual laboratories for specific tests or measurements.

Proficiency Testing (PT) Program - targets high volume testing in the disciplines of inorganic chemistry, organic chemistry, toxicology, occupational health and microbiology for the following matrices: water, waste oil, soil/sediment, air collection media (e.g. quartz and cellulose acetate filters, and charcoal tubes) and asbestos testing.

Replicate sample – a sample collected at the same time as the original sample to determine the precision (how close the results are to each other) of tests.

Secchi disc – a flat plate with four quadrants painted alternating white and black used in the field to measure the transparency of the water column. The measurement is made by allowing the disc to drop to the point where it is no longer visible, then raising the disc until it is visible and averaging the two depths.

Sensors - electrical, electrochemical, or optical in nature and respond to changing water conditions with an output signal that is processed and displayed or recorded.

SOD (Sediment oxygen demand) - a measure of the oxygen consumed by biochemical decomposition of organic matter in stream or lake deposits.

Sonde – multiple sensors in one configuration.

Split samples - aliquots taken from the same container and assumed to be identical. These samples can be sent to two or more laboratories for separate analysis and the results can be used to determine inter-laboratory variability of the different laboratories or the consistency of results within one laboratory.

Standard reference materials or samples - (where the actual value has been certified independently) are used to determine if the results are accurate (close to the true value).

TDG - Transportation of Dangerous Goods.

Surber sampler - used to collect invertebrate samples for depths less than 30 cm.

Travelling-Kick-and-Sweep - the standard sampling method typically applied by wading along transects through the habitat of interest, kicking the substrate to dislodge benthos, and collecting dislodged benthos by "sweeping" a hand-held net through the water.

Trip blanks – these bottles measure volatile compounds, they are usually prepared in the laboratory and simply travel with the required sample bottles. The trip blanks are placed along side the required sample bottles for the duration of the sample period and return to the laboratory without ever being opened.

v/v – volume to volume used in reference to the amount of acid in solution.

Van Dorn sampler – a sampler used for lake sampling sites > 2 m in depth.

WHMIS - Workplace Hazardous Materials Information System ensures that all controlled products are labeled. This ensures that workers can identify all products, the dangers associated with products and any necessary safety precautions.

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ATTACHMENT NOC-02-02-E

NOC-02-02-E1: Updated Model Inputs for Total Phosphorus

Condition	Site	Month	Original Model Inputs (Based on Colorimetric and ICPMS Analyses)			Updated Model Inputs (Based on Colorimetric Analyses Only)		
			Monthly Mean Phosphorus_T (mg/L)	Detection Limits Associated With Monthly Mean	Eutrophic Status Based on Total Phosphorus Trigger Range (CCME)	Monthyl Mean Phosphorus_T (mg/L)	Detection Limits	Eutrophic Status Based on Total Phosphorus Trigger Range (CCME)
36-h post-aeration	AQF6_10P	10	0.0215	<0.003, <0.01	meso-eutrophic	Not updated (original values based on colorimetric analysis)		
36-h post-aeration	AQF6_50P	10	0.0177	<0.003, <0.01	mesotrophic	Not updated (original values based on colorimetric analysis)		
36-h post-aeration	AQF6_90P	10	0.0325	<0.003, <0.01	meso-eutrophic	Not updated (original values based on colorimetric analysis)		
Baseline	AQF40	5	0.0227	<0.003, <0.05	meso-eutrophic	0.0131	<0.001, <0.003	mesotrophic
Baseline	AQF40	6	0.0150	<0.03	mesotrophic	0.0215	<0.003	meso-eutrophic
Baseline	AQF40	7	0.0116	<0.001, <0.03, <0.05	mesotrophic	0.0123	<0.001, <0.003	mesotrophic
Baseline	AQF40	8	0.0150	<0.03	mesotrophic	0.0154	<0.003	mesotrophic
Baseline	AQF40	9	0.0116	<0.003	mesotrophic	0.0116	<0.003	mesotrophic
Baseline	AQF40	10	0.0200	<0.03, <0.05	mesotrophic	0.0146	<0.001, <0.003	mesotrophic
Baseline	AQF41	5	0.0150	<0.03	mesotrophic	0.0192	<0.003	mesotrophic
Baseline	AQF41	6	0.0206	<0.003	meso-eutrophic	0.0206	<0.003	meso-eutrophic
Baseline	AQF41	7	0.0133	<0.003	mesotrophic	0.0133	<0.003	mesotrophic
Baseline	AQF41	8	0.0151	<0.003	mesotrophic	0.0151	<0.003	mesotrophic
Baseline	AQF41	9	0.0150	<0.03	mesotrophic	0.0157	<0.003	mesotrophic
Baseline	AQF41	10	0.0153	<0.003	mesotrophic	0.0153	<0.003	mesotrophic
Baseline	AQF42	5	0.0150	<0.03	mesotrophic	0.0188	<0.003	mesotrophic
Baseline	AQF42	6	0.0156	<0.003	mesotrophic	0.0156	<0.003	mesotrophic
Baseline	AQF42	7	0.0150	<0.03	mesotrophic	0.0183	<0.003	mesotrophic
Baseline	AQF42	8	0.0139	<0.003	mesotrophic	0.0139	<0.003	mesotrophic
Baseline	AQF42	9	0.0150	<0.03	mesotrophic	0.0103	<0.003	mesotrophic
Baseline	AQF42	10	0.0150	<0.03	mesotrophic	0.0151	<0.003	mesotrophic
Baseline	AQF43	5	**0.0310**	<0.03	meso-eutrophic	0.0100	<0.003	mesotrophic
Baseline	AQF43	6	0.0150	<0.03	mesotrophic	0.0140	<0.003	mesotrophic
Baseline	AQF43	7	0.0151	<0.003	mesotrophic	0.0151	<0.003	mesotrophic
Baseline	AQF43	8	0.0161	<0.003	mesotrophic	0.0161	<0.003	mesotrophic
Baseline	AQF43	9	0.0150	<0.03	mesotrophic	0.0129	<0.003	mesotrophic
Baseline	AQF43	10	0.0145	<0.003	mesotrophic	0.0145	<0.003	mesotrophic
Baseline	AQF44	5	0.0178	<0.003	mesotrophic	0.0178	<0.003	mesotrophic
Baseline	AQF44	6	0.0150	<0.03	mesotrophic	0.0142	<0.003	mesotrophic
Baseline	AQF44	7	0.0150	<0.03	mesotrophic	0.0161	<0.003	mesotrophic
Baseline	AQF44	8	0.0151	<0.003	mesotrophic	0.0151	<0.003	mesotrophic
Baseline	AQF44	9	0.0150	<0.03	mesotrophic	0.0122	<0.003	mesotrophic
Baseline	AQF44	10	0.0150	<0.03	mesotrophic	0.0182	<0.003	mesotrophic

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NOC-02-02-E1: Updated Model Inputs for Total Phosphorus

Condition	Site	Month	Original Model Inputs (Based on Colorimetric and ICPMS Analyses)			Updated Model Inputs (Based on Colorimetric Analyses Only)		
			Monthly Mean Phosphorus_T (mg/L)	Detection Limits Associated With Monthly Mean	Eutrophic Status Based on Total Phosphorus Trigger Range (CCME)	Monthyl Mean Phosphorus_T (mg/L)	Detection Limits	Eutrophic Status Based on Total Phosphorus Trigger Range (CCME)
Baseline	AQF45	5	0.0201	<0.003	meso-eutrophic	0.0201	<0.003	meso-eutrophic
Baseline	AQF45	6	0.0148	<0.003	mesotrophic	0.0148	<0.003	mesotrophic
Baseline	AQF45	7	0.0175	<0.003	mesotrophic	0.0175	<0.003	mesotrophic
Baseline	AQF45	8	0.0175	<0.003	mesotrophic	0.0175	<0.003	mesotrophic
Baseline	AQF45	9	0.0126	<0.003	mesotrophic	0.0126	<0.003	mesotrophic
Baseline	AQF45	10	0.0128	<0.003	mesotrophic	0.0128	<0.003	mesotrophic

Notes:
Bold values = concentrations above the MWGSOG for total phosphorus (mg/L)
Shadec cells = updated values that differ from the original value
Underlined values = non-detect values assigned half the detection limit
The original data for the aerated pit were derived by colorimetric analyses; therefore, the corresponding statistics were not updated.

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NOC-02-02-E2: Model Base Case Predictions with Updated Inputs for Total Phosphorus

Site	Month (May to October)	Baseline (mg/L)	Median Mixed Pit Concentration									10 Percentile Pit Concentration								
			Meadian Flow			10P Flow			90P Flow			Meadian Flow			10P Flow			90P Flow		
			Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value
			mg/L	mg/L		mg/L	mg/L		mg/L	mg/L		mg/L	mg/L		mg/L	mg/L		mg/L	mg/L	
AQF40	5	0.0131	0.0227	**0.0131**	58%	0.0227	**0.0132**	58%	0.0227	**0.0131**	58%	0.0225	**0.0132**	58.8%	0.0226	**0.0134**	59%	0.0227	**0.0131**	58%
	6	0.0215	0.0151	**0.0215**	142%	0.0151	**0.0215**	142%	0.0150	**0.0215**	143%	0.0151	**0.0213**	140.6%	0.0151	**0.0212**	141%	0.0150	**0.0214**	143%
	7	0.0123	0.0118	0.0125	106%	0.0118	0.0125	106%	0.0117	0.0124	106%	0.0120	0.0127	105.6%	0.0117	0.0128	109%	0.0116	0.0125	107%
	8	0.0154	0.0151	0.0155	103%	0.0152	0.0155	103%	0.0150	0.0154	103%	0.0152	0.0156	102.5%	0.0151	0.0156	104%	0.0150	0.0155	103%
	9	0.0116	0.0118	0.0118	-	0.0118	0.0118	-	0.0117	0.0117	-	0.0120	0.0120	-	0.0117	0.0121	103%	0.0116	0.0118	101%
	10	0.0146	0.0200	0.0147	73%	0.0200	0.0147	73%	0.0200	0.0146	73%	0.0199	0.0148	74.3%	0.0200	0.0148	74%	0.0200	0.0147	73%
AQF41	5	0.0192	0.0151	0.0192	128%	0.0151	0.0192	127%	0.0150	0.0192	128%	0.0151	0.0191	126.7%	0.0151	0.0191	127%	0.0150	0.0192	128%
	6	0.0206	0.0206	0.0206	-	0.0206	0.0206	-	0.0206	0.0206	-	0.0204	0.0204	-	0.0205	0.0204	99%	0.0206	0.0205	-
	7	0.0133	0.0134	0.0134	-	0.0135	0.0135	-	0.0134	0.0134	-	0.0136	0.0136	-	0.0134	0.0137	102%	0.0133	0.0134	101%
	8	0.0151	0.0152	0.0152	-	0.0153	0.0153	-	0.0151	0.0151	-	0.0153	0.0153	-	0.0152	0.0153	101%	0.0151	0.0152	-
	9	0.0157	0.0151	0.0158	105%	0.0152	0.0158	105%	0.0151	0.0157	105%	0.0152	0.0158	104.3%	0.0151	0.0159	105%	0.0150	0.0158	105%
	10	0.0153	0.0154	0.0154	-	0.0154	0.0154	-	0.0154	0.0154	-	0.0155	0.0155	-	0.0154	0.0155	101%	0.0153	0.0154	-
AQF42	5	0.0188	0.0151	0.0188	125%	0.0151	0.0189	125%	0.0150	0.0188	125%	0.0151	0.0188	124.1%	0.0151	0.0187	124%	0.0150	0.0188	125%
	6	0.0156	0.0157	0.0157	-	0.0157	0.0157	-	0.0156	0.0156	-	0.0157	0.0157	-	0.0156	0.0158	101%	0.0156	0.0156	-
	7	0.0183	0.0151	0.0184	121%	0.0152	0.0184	121%	0.0150	0.0183	122%	0.0152	0.0183	120.3%	0.0151	0.0182	121%	0.0150	0.0183	122%
	8	0.0139	0.0140	0.0140	-	0.0141	0.0141	-	0.0140	0.0140	-	0.0141	0.0141	-	0.0140	0.0142	102%	0.0139	0.0140	101%
	9	0.0103	0.0151	0.0105	69%	0.0152	0.0106	70%	0.0151	0.0104	69%	0.0152	0.0108	71.1%	0.0151	0.0109	73%	0.0150	0.0105	70%
	10	0.0151	0.0151	0.0152	101%	0.0151	0.0152	101%	0.0151	0.0152	101%	0.0152	0.0153	100.6%	0.0151	0.0153	102%	0.0150	0.0152	101%
AQF43	5	0.0100	**0.0309**	**0.0101**	33%	**0.0308**	**0.0102**	33%	**0.0310**	**0.0100**	32%	**0.0305**	**0.0103**	33.8%	**0.0307**	**0.0106**	34%	**0.0309**	**0.0101**	33%
	6	0.0140	0.0151	0.0141	93%	0.0151	0.0142	94%	0.0150	0.0140	93%	0.0151	0.0142	93.8%	0.0151	0.0143	95%	0.0150	0.0141	94%
	7	0.0151	0.0152	0.0152	-	0.0152	0.0152	-	0.0151	0.0151	-	0.0153	0.0153	-	0.0152	0.0153	101%	0.0151	0.0152	-
	8	0.0161	0.0162	0.0162	-	0.0162	0.0162	-	0.0161	0.0161	-	0.0162	0.0162	-	0.0161	0.0162	101%	0.0161	0.0161	-
	9	0.0129	0.0151	0.0131	86%	0.0152	0.0131	86%	0.0151	0.0130	86%	0.0152	0.0132	87.1%	0.0151	0.0133	88%	0.0150	0.0131	87%
	10	0.0145	0.0146	0.0146	-	0.0146	0.0146	-	0.0146	0.0146	-	0.0147	0.0147	-	0.0146	0.0148	101%	0.0145	0.0146	101%
AQF44	5	0.0178	0.0178	0.0178	-	0.0179	0.0179	-	0.0178	0.0178	-	0.0178	0.0178	-	0.0178	0.0178	-	0.0178	0.0178	-
	6	0.0142	0.0151	0.0143	95%	0.0151	0.0144	95%	0.0150	0.0142	95%	0.0151	0.0144	95.0%	0.0151	0.0145	96%	0.0150	0.0143	95%
	7	0.0161	0.0151	0.0162	107%	0.0152	0.0162	107%	0.0150	0.0161	107%	0.0152	0.0162	106.8%	0.0151	0.0162	108%	0.0150	0.0161	108%
	8	0.0151	0.0152	0.0152	-	0.0153	0.0153	-	0.0151	0.0151	-	0.0153	0.0153	-	0.0152	0.0153	101%	0.0151	0.0152	-
	9	0.0122	0.0151	0.0124	82%	0.0152	0.0124	82%	0.0151	0.0123	82%	0.0152	0.0126	82.8%	0.0151	0.0127	84%	0.0150	0.0124	82%
	10	0.0182	0.0151	0.0183	121%	0.0151	0.0183	121%	0.0151	0.0182	121%	0.0152	0.0182	119.7%	0.0151	0.0182	121%	0.0150	0.0182	121%
AQF45	5	0.0201	0.0201	0.0201	-	0.0201	0.0201	-	0.0201	0.0201	-	0.0200	0.0200	100.0%	0.0201	0.0199	99%	0.0201	0.0201	-
	6	0.0148	0.0149	0.0149	-	0.0149	0.0149	-	0.0148	0.0148	-	0.0150	0.0150	100.0%	0.0149	0.0150	101%	0.0148	0.0149	-
	7	0.0175	0.0176	0.0176	-	0.0176	0.0176	-	0.0175	0.0175	-	0.0175	0.0175	100.0%	0.0175	0.0175	-	0.0175	0.0175	-
	8	0.0175	0.0176	0.0176	-	0.0176	0.0176	-	0.0175	0.0175	-	0.0175	0.0175	100.0%	0.0175	0.0175	-	0.0175	0.0175	-
	9	0.0126	0.0128	0.0128	-	0.0128	0.0128	-	0.0127	0.0127	-	0.0129	0.0129	100.0%	0.0127	0.0130	103%	0.0126	0.0128	101%
	10	0.0128	0.0129	0.0129	-	0.0130	0.0130	-	0.0129	0.0129	-	0.0131	0.0131	100.0%	0.0129	0.0132	102%	0.0128	0.0130	101%
AQF40 Median	May-Oct	0.0151	0.0151	0.0151	-	0.0152	0.0151	-	0.0151	0.0150	-	0.0150	0.0140	93.0%	0.0151	0.0141	94%	0.0150	0.0139	92%
AQF40 90P	May-Oct	0.0195	0.0200	0.0184	92%	0.0200	0.0184	92%	0.0200	0.0184	92%	0.0200	0.0184	92.2%	0.0200	0.0184	92%	0.0200	0.0184	92%
AQF40 10P	May-Oct	0.0120	0.0129	0.0123	95%	0.0130	0.0124	95%	0.0129	0.0122	95%	0.0129	0.0123	96.0%	0.0129	0.0125	97%	0.0128	0.0121	95%

NOC-02-02-E2: Model Base Case Predictions with Updated Inputs for Total Phosphorus

Site	Month (May to October)	Baseline (mg/L)	90 Percentile Pit Concentration								
			Meadian Flow			10P Flow			90P Flow		
			Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value
			mg/L	mg/L		mg/L	mg/L		mg/L	mg/L	
AQF40	5	0.0131	0.0227	**0.0138**	61%	0.0227	**0.0145**	64%	0.0227	**0.0133**	59%
	6	0.0215	0.0151	**0.0221**	146%	0.0151	**0.0224**	148%	0.0151	**0.0217**	144%
	7	0.0123	0.0118	0.0137	116%	0.0118	0.0141	120%	0.0118	0.0129	110%
	8	0.0154	0.0151	0.0165	109%	0.0151	0.0169	112%	0.0151	0.0159	105%
	9	0.0116	0.0118	0.0130	110%	0.0118	0.0134	114%	0.0118	0.0123	104%
	10	0.0146	0.0201	**0.0157**	78%	0.0201	**0.0160**	80%	0.0201	**0.0152**	76%
AQF41	5	0.0192	0.0151	0.0197	131%	0.0151	0.0202	134%	0.0151	0.0194	129%
	6	0.0206	0.0207	0.0213	102.8%	0.0207	0.0216	104%	0.0207	0.0209	101%
	7	0.0133	0.0134	0.0146	108%	0.0134	0.0150	111%	0.0134	0.0139	103%
	8	0.0151	0.0152	0.0162	107%	0.0152	0.0166	109%	0.0152	0.0156	102%
	9	0.0157	0.0151	0.0168	111%	0.0151	0.0172	113%	0.0151	0.0162	107%
	10	0.0153	0.0155	0.0164	106%	0.0155	0.0167	108%	0.0155	0.0159	103%
AQF42	5	0.0188	0.0151	0.0194	128%	0.0151	0.0198	132%	0.0151	0.0190	126%
	6	0.0156	0.0157	0.0165	105%	0.0157	0.0170	108%	0.0157	0.0160	102%
	7	0.0183	0.0151	0.0192	127%	0.0151	0.0195	129%	0.0151	0.0187	124%
	8	0.0139	0.0140	0.0151	108%	0.0140	0.0155	111%	0.0140	0.0144	103%
	9	0.0103	0.0151	0.0118	78%	0.0151	0.0122	81%	0.0151	0.0110	73%
	10	0.0151	0.0152	0.0162	107%	0.0152	0.0165	109%	0.0152	0.0157	104%
AQF43	5	0.0100	**0.0310**	**0.0109**	35%	**0.0310**	**0.0117**	38%	**0.0310**	**0.0103**	33%
	6	0.0140	0.0151	0.0150	99%	0.0151	0.0155	103%	0.0151	0.0144	95%
	7	0.0151	0.0152	0.0163	107%	0.0152	0.0166	109%	0.0152	0.0156	103%
	8	0.0161	0.0162	0.0172	106%	0.0162	0.0175	108%	0.0162	0.0166	102%
	9	0.0129	0.0151	0.0142	94%	0.0151	0.0146	97%	0.0151	0.0135	89%
	10	0.0145	0.0147	0.0157	107%	0.0147	0.0159	109%	0.0147	0.0152	103%
AQF44	5	0.0178	0.0179	0.0184	103%	0.0179	0.0189	106%	0.0179	0.0180	101%
	6	0.0142	0.0151	0.0152	101%	0.0151	0.0157	104%	0.0151	0.0146	97%
	7	0.0161	0.0151	0.0172	114%	0.0151	0.0175	116%	0.0151	0.0166	110%
	8	0.0151	0.0152	0.0162	107%	0.0152	0.0166	109%	0.0152	0.0156	102%
	9	0.0122	0.0151	0.0136	90%	0.0151	0.0140	92%	0.0151	0.0128	85%
	10	0.0182	0.0152	0.0191	126%	0.0152	0.0194	128%	0.0152	0.0187	123%
AQF45	5	0.0201	0.0201	0.0206	102%	0.0201	0.0210	104%	0.0201	0.0203	101%
	6	0.0148	0.0149	0.0158	106%	0.0149	0.0163	109%	0.0149	0.0152	102%
	7	0.0175	0.0176	0.0185	105%	0.0176	0.0188	107%	0.0176	0.0179	102%
	8	0.0175	0.0176	0.0185	105%	0.0176	0.0188	107%	0.0176	0.0179	102%
	9	0.0126	0.0128	0.0139	109%	0.0128	0.0143	112%	0.0128	0.0132	104%
	10	0.0128	0.0130	0.0141	108%	0.0130	0.0144	111%	0.0130	0.0135	104%
AQF40 Median	May-Oct	0.0151	0.0151	0.0148	98%	0.0151	0.0153	101%	0.0151	0.0143	94%
AQF40 90P	May-Oct	0.0195	0.0201	**0.0193**	96%	0.0201	**0.0197**	98%	0.0201	**0.0188**	94%
AQF40 10P	May-Oct	0.0120	0.0130	0.0133	103%	0.0130	0.0138	106%	0.0130	0.0126	97%

Notes:

10P = 10th percentile; 90P = 90th percentile

Bold values = concentrations above the MWGSOG for total phosphorus (mg/L)

Shadec cells = updated values that differ from the original value

Bold red cells = a change in eutrophic status based on the CCME trigger ranges for total phosphorus. Changes were mostly from meso-eutrophic (0.02 - 0.035 mg/L) to mesotrophic (0.01 to 0.02 mg/L), but in some cases (i.e., June at AQF40), the change was from mesotrophic to meso-eutrophic.

DRAFT

NOC-02-02-E3: Model Predictions for 2x Pumping Rate Scenario with Updated Inputs for Total Phosphorus

Site	Month (May to October)	Baseline (mg/L)	Median Mixed Pit Concentration									10 Percentile Pit Concentration								
			Meadian Flow			10P Flow			90P Flow			Meadian Flow			10P Flow			90P Flow		
			Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value
			mg/L	mg/L		mg/L	mg/L		mg/L	mg/L		mg/L	mg/L		mg/L	mg/L		mg/L	mg/L	
AQF40	5	0.0131	0.0227	**0.0132**	58%	0.0227	**0.0134**	59%	0.0227	**0.0131**	58%	0.0226	**0.0131**	58%	0.0225	**0.0132**	59%	0.0227	**0.0131**	58%
	6	0.0215	0.0152	**0.0215**	142%	0.0153	**0.0215**	141%	0.0151	**0.0215**	143%	0.0151	**0.0214**	142%	0.0151	**0.0213**	141%	0.0150	**0.0215**	143%
	7	0.0123	0.0119	0.0126	106%	0.0121	0.0127	106%	0.0117	0.0125	106%	0.0118	0.0125	106%	0.0119	0.0126	106%	0.0117	0.0124	106%
	8	0.0154	0.0152	0.0156	103%	0.0153	0.0157	102%	0.0151	0.0155	103%	0.0151	0.0155	103%	0.0151	0.0155	103%	0.0150	0.0154	103%
	9	0.0116	0.0119	0.0119	-	0.0121	0.0121	-	0.0118	0.0118	-	0.0118	0.0118	-	0.0119	0.0119	-	0.0117	0.0117	-
	10	0.0146	0.0200	0.0148	74%	0.0201	0.0148	74%	0.0200	0.0147	73%	0.0199	0.0147	74%	0.0199	0.0147	74%	0.0200	0.0146	73%
AQF41	5	0.0192	0.0151	0.0192	127%	0.0153	0.0193	126%	0.0151	0.0192	128%	0.0151	0.0192	127%	0.0151	0.0191	127%	0.0150	0.0192	128%
	6	0.0206	0.0206	0.0206	-	0.0206	0.0206	-	0.0206	0.0206	-	0.0205	0.0205	-	0.0205	0.0205	-	0.0206	0.0206	-
	7	0.0133	0.0136	0.0136	-	0.0137	0.0137	-	0.0134	0.0134	-	0.0135	0.0135	-	0.0135	0.0135	-	0.0134	0.0134	-
	8	0.0151	0.0153	0.0153	-	0.0154	0.0154	-	0.0152	0.0152	-	0.0152	0.0152	-	0.0152	0.0152	-	0.0151	0.0151	-
	9	0.0157	0.0152	0.0159	104%	0.0153	0.0160	104%	0.0151	0.0158	105%	0.0151	0.0158	104%	0.0151	0.0158	104%	0.0150	0.0157	105%
	10	0.0153	0.0155	0.0155	-	0.0156	0.0156	-	0.0154	0.0154	-	0.0154	0.0154	-	0.0154	0.0154	-	0.0153	0.0153	-
AQF42	5	0.0188	0.0151	0.0189	125%	0.0153	0.0189	124%	0.0151	0.0188	125%	0.0151	0.0188	125%	0.0151	0.0188	124%	0.0150	0.0188	125%
	6	0.0156	0.0158	0.0158	-	0.0159	0.0159	-	0.0157	0.0157	-	0.0157	0.0157	-	0.0157	0.0157	-	0.0156	0.0156	-
	7	0.0183	0.0152	0.0184	121%	0.0153	0.0184	121%	0.0151	0.0183	122%	0.0151	0.0183	121%	0.0151	0.0183	121%	0.0150	0.0183	122%
	8	0.0139	0.0142	0.0142	-	0.0143	0.0143	-	0.0140	0.0140	-	0.0140	0.0140	-	0.0141	0.0141	-	0.0140	0.0140	-
	9	0.0103	0.0152	0.0107	70%	0.0153	0.0108	71%	0.0151	0.0105	69%	0.0151	0.0106	70%	0.0151	0.0106	70%	0.0150	0.0104	69%
	10	0.0151	0.0152	0.0153	101%	0.0153	0.0154	101%	0.0151	0.0152	101%	0.0151	0.0152	101%	0.0151	0.0152	101%	0.0151	0.0151	101%
AQF43	5	0.0100	**0.0308**	**0.0102**	33%	**0.0306**	**0.0104**	34%	**0.0309**	**0.0101**	33%	**0.0307**	**0.0102**	33%	**0.0305**	**0.0103**	34%	**0.0309**	**0.0101**	33%
	6	0.0140	0.0152	0.0142	94%	0.0153	0.0143	94%	0.0151	0.0141	93%	0.0151	0.0141	94%	0.0151	0.0142	94%	0.0150	0.0140	93%
	7	0.0151	0.0153	0.0153	-	0.0154	0.0154	-	0.0152	0.0152	-	0.0152	0.0152	-	0.0152	0.0152	-	0.0151	0.0151	-
	8	0.0161	0.0163	0.0163	-	0.0163	0.0163	-	0.0162	0.0162	-	0.0162	0.0162	-	0.0162	0.0162	-	0.0161	0.0161	-
	9	0.0129	0.0152	0.0132	87%	0.0153	0.0133	87%	0.0151	0.0130	86%	0.0151	0.0131	87%	0.0151	0.0131	87%	0.0150	0.0130	86%
	10	0.0145	0.0147	0.0147	-	0.0148	0.0148	-	0.0146	0.0146	-	0.0146	0.0146	-	0.0146	0.0146	-	0.0146	0.0146	-
AQF44	5	0.0178	0.0179	0.0179	-	0.0179	0.0179	-	0.0178	0.0178	-	0.0178	0.0178	-	0.0178	0.0178	-	0.0178	0.0178	-
	6	0.0142	0.0152	0.0144	95%	0.0153	0.0145	95%	0.0151	0.0143	95%	0.0151	0.0143	95%	0.0151	0.0144	95%	0.0150	0.0142	95%
	7	0.0161	0.0152	0.0163	107%	0.0153	0.0163	107%	0.0151	0.0162	107%	0.0151	0.0162	107%	0.0151	0.0162	107%	0.0150	0.0161	107%
	8	0.0151	0.0153	0.0153	-	0.0154	0.0154	-	0.0152	0.0152	-	0.0152	0.0152	-	0.0152	0.0152	-	0.0151	0.0151	-
	9	0.0122	0.0152	0.0125	82%	0.0153	0.0126	83%	0.0151	0.0123	82%	0.0151	0.0124	82%	0.0151	0.0125	82%	0.0150	0.0123	82%
	10	0.0182	0.0152	0.0183	120%	0.0153	0.0183	120%	0.0151	0.0183	121%	0.0151	0.0182	121%	0.0151	0.0182	120%	0.0151	0.0182	121%
AQF45	5	0.0201	0.0201	0.0201	-	0.0202	0.0202	-	0.0201	0.0201	-	0.0201	0.0201	-	0.0200	0.0200	-	0.0201	0.0201	-
	6	0.0148	0.0150	0.0150	-	0.0151	0.0151	-	0.0149	0.0149	-	0.0149	0.0149	-	0.0149	0.0149	-	0.0148	0.0148	-
	7	0.0175	0.0176	0.0176	-	0.0177	0.0177	-	0.0176	0.0176	-	0.0175	0.0175	-	0.0175	0.0175	-	0.0175	0.0175	-
	8	0.0175	0.0176	0.0176	-	0.0177	0.0177	-	0.0176	0.0176	-	0.0175	0.0175	-	0.0175	0.0175	-	0.0175	0.0175	-
	9	0.0126	0.0129	0.0129	-	0.0130	0.0130	-	0.0127	0.0127	-	0.0128	0.0128	-	0.0128	0.0128	-	0.0127	0.0127	-
	10	0.0128	0.0131	0.0131	-	0.0132	0.0132	-	0.0130	0.0130	-	0.0130	0.0130	-	0.0130	0.0130	-	0.0129	0.0129	-
AQF40 Median	May-Oct	0.0151	0.0152	0.0153	101%	0.0153	0.0154	101%	0.0151	0.0152	101%	0.0151	0.0152	101%	0.0151	0.0152	101%	0.0150	0.0151	101%
AQF40 90P	May-Oct	0.0195	0.0201	**0.0191**	95%	0.0201	**0.0191**	95%	0.0201	**0.0190**	95%	0.0200	0.0190	95%	0.0200	0.0189	95%	0.0200	0.0190	95%
AQF40 10P	May-Oct	0.0120	0.0133	0.0126	94%	0.0134	0.0127	95%	0.0132	0.0124	94%	0.0132	0.0124	94%	0.0133	0.0125	94%	0.0131	0.0123	94%

NOC-02-02-E3: Model Predictions for 2x Pumping Rate Scenario with Updated Inputs for Total Phosphorus

Site	Month (May to October)	Baseline (mg/L)	90 Percentile Pit Concentration								
			Meadian Flow			10P Flow			90P Flow		
			Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value
			mg/L	mg/L		mg/L	mg/L		mg/L	mg/L	
AQF40	5	0.0131	0.0227	**0.0135**	59%	0.0227	**0.0138**	61%	0.0227	**0.0132**	58%
	6	0.0215	0.0150	**0.0218**	145%	0.0150	**0.0220**	146%	0.0150	**0.0216**	144%
	7	0.0123	0.0117	0.0130	111%	0.0117	0.0132	113%	0.0117	0.0126	108%
	8	0.0154	0.0150	0.0160	106%	0.0150	0.0162	108%	0.0150	0.0157	104%
	9	0.0116	0.0117	0.0123	105%	0.0117	0.0126	107%	0.0117	0.0119	102%
	10	0.0146	0.0200	0.0151	76%	0.0200	0.0153	77%	0.0200	0.0149	75%
AQF41	5	0.0192	0.0150	0.0195	130%	0.0150	0.0197	131%	0.0150	0.0193	129%
	6	0.0206	0.0206	0.0209	102%	0.0206	0.0211	103%	0.0206	0.0207	101%
	7	0.0133	0.0134	0.0140	104%	0.0134	0.0142	106%	0.0134	0.0136	102%
	8	0.0151	0.0151	0.0157	104%	0.0151	0.0159	105%	0.0151	0.0154	101%
	9	0.0157	0.0150	0.0163	108%	0.0150	0.0165	109%	0.0150	0.0160	106%
	10	0.0153	0.0153	0.0159	103%	0.0153	0.0160	104%	0.0153	0.0156	102%
AQF42	5	0.0188	0.0150	0.0191	127%	0.0150	0.0193	129%	0.0150	0.0189	126%
	6	0.0156	0.0156	0.0161	103%	0.0156	0.0163	105%	0.0156	0.0158	101%
	7	0.0183	0.0150	0.0188	125%	0.0150	0.0189	126%	0.0150	0.0185	123%
	8	0.0139	0.0140	0.0145	104%	0.0140	0.0148	106%	0.0140	0.0142	102%
	9	0.0103	0.0150	0.0111	74%	0.0150	0.0113	75%	0.0150	0.0107	71%
	10	0.0151	0.0151	0.0157	104%	0.0151	0.0158	105%	0.0151	0.0154	103%
AQF43	5	0.0100	**0.0309**	**0.0105**	34%	**0.0309**	**0.0109**	35%	**0.0309**	**0.0102**	33%
	6	0.0140	0.0150	0.0145	97%	0.0150	0.0148	98%	0.0150	0.0142	95%
	7	0.0151	0.0151	0.0157	104%	0.0151	0.0159	105%	0.0151	0.0154	101%
	8	0.0161	0.0161	0.0167	103%	0.0161	0.0169	105%	0.0161	0.0163	101%
	9	0.0129	0.0150	0.0136	90%	0.0150	0.0138	92%	0.0150	0.0132	88%
	10	0.0145	0.0146	0.0151	104%	0.0146	0.0153	105%	0.0146	0.0148	102%
AQF44	5	0.0178	0.0178	0.0181	102%	0.0178	0.0184	103%	0.0178	0.0179	101%
	6	0.0142	0.0150	0.0147	98%	0.0150	0.0150	99.7%	0.0150	0.0144	96%
	7	0.0161	0.0150	0.0167	111%	0.0150	0.0168	112%	0.0150	0.0163	109%
	8	0.0151	0.0151	0.0157	104%	0.0151	0.0159	105%	0.0151	0.0154	101%
	9	0.0122	0.0150	0.0129	86%	0.0150	0.0131	87%	0.0150	0.0125	83%
	10	0.0182	0.0151	0.0187	124%	0.0151	0.0188	125%	0.0151	0.0185	123%
AQF45	5	0.0201	0.0201	0.0204	101%	0.0201	0.0206	103%	0.0201	0.0202	101%
	6	0.0148	0.0148	0.0153	103%	0.0148	0.0156	105%	0.0148	0.0150	101%
	7	0.0175	0.0175	0.0180	103%	0.0175	0.0182	104%	0.0175	0.0177	101%
	8	0.0175	0.0175	0.0180	103%	0.0175	0.0182	104%	0.0175	0.0177	101%
	9	0.0126	0.0127	0.0133	105%	0.0127	0.0135	107%	0.0127	0.0129	102%
	10	0.0128	0.0129	0.0135	104%	0.0129	0.0136	106%	0.0129	0.0132	102%
AQF40 Median	May-Oct	0.0151	0.0150	0.0143	95%	0.0150	0.0146	97%	0.0150	0.0140	93%
AQF40 90P	May-Oct	0.0195	0.0200	0.0189	94%	0.0200	0.0191	95%	0.0200	0.0186	93%
AQF40 10P	May-Oct	0.0120	0.0131	0.0127	97%	0.0131	0.0129	98%	0.0131	0.0123	94%

Notes:

10P = 10th percentile; 90P = 90th percentile

Bold values = concentrations above the MWGSOG for total phosphorus (mg/L)

Shaded cells = updated values that differ from the original value

Bold red cells = a change in eutrophic status based on the CCME trigger ranges for total phosphorus. Changes were mostly from meso-eutrophic (0.02 - 0.035 mg/L) to mesotrophic (0.01 to 0.02 mg/L), but in some cases (i.e., June at AQF40), the change was from mesotrophic to meso-eutrophic.

NOA-02-02-E4: Model Predictions for the Mixing Zone Scenario with Updated Inputs for Total Phosphorus

Site	Month (May to October)	Baseline (mg/L)	Median Mixed Pit Concentration									10 Percentile Pit Concentration								
			Meadian Flow			10P Flow			90P Flow			Meadian Flow			10P Flow			90P Flow		
			Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value
			mg/L	mg/L		mg/L	mg/L		mg/L	mg/L		mg/L	mg/L		mg/L	mg/L		mg/L	mg/L	
AQF40	5	0.0131	0.0227	**0.0134**	59%	0.0227	**0.0137**	60%	0.0227	**0.0132**	58%	0.0225	**0.0225**	100%	0.0226	**0.0131**	58%	0.0227	**0.0131**	58%
	6	0.0215	0.0154	**0.0215**	140%	0.0151	**0.0215**	142%	0.0150	**0.0215**	143%	0.0151	**0.0151**	100%	0.0151	**0.0214**	142%	0.0150	**0.0215**	143%
	7	0.0123	0.0123	0.0129	106%	0.0118	0.0131	111%	0.0117	0.0126	108%	0.0120	0.0120	100%	0.0117	0.0125	106%	0.0116	0.0124	106%
	8	0.0154	0.0154	0.0158	102%	0.0152	0.0159	105%	0.0150	0.0156	104%	0.0152	0.0152	100%	0.0151	0.0155	103%	0.0150	0.0154	103%
	9	0.0116	0.0123	0.0123	-	0.0118	0.0125	-	0.0117	0.0119	-	0.0120	0.0120	-	0.0117	0.0117	-	0.0116	0.0116	-
	10	0.0146	0.0201	0.0150	75%	0.0200	0.0151	75%	0.0200	0.0148	74%	0.0199	0.0199	100%	0.0200	0.0146	73%	0.0200	0.0146	73%
AQF41	5	0.0192	0.0153	0.0193	126%	0.0151	0.0194	128%	0.0150	0.0192	128%	0.0151	0.0151	100%	0.0151	0.0192	127%	0.0150	0.0192	128%
	6	0.0206	0.0206	0.0206	-	0.0206	0.0207	-	0.0206	0.0206	-	0.0204	0.0204	-	0.0205	0.0205	-	0.0206	0.0206	-
	7	0.0133	0.0138	0.0138	-	0.0135	0.0140	-	0.0134	0.0135	-	0.0136	0.0136	-	0.0134	0.0134	-	0.0133	0.0133	-
	8	0.0151	0.0155	0.0155	-	0.0153	0.0157	-	0.0151	0.0153	-	0.0153	0.0153	-	0.0152	0.0152	-	0.0151	0.0151	-
	9	0.0157	0.0154	0.0161	104%	0.0152	0.0162	107%	0.0151	0.0159	106%	0.0152	0.0152	100%	0.0151	0.0157	105%	0.0150	0.0157	105%
	10	0.0153	0.0157	0.0157	-	0.0154	0.0158	-	0.0154	0.0155	-	0.0155	0.0155	-	0.0154	0.0154	-	0.0153	0.0153	-
AQF42	5	0.0188	0.0153	0.0189	124%	0.0151	0.0190	126%	0.0150	0.0188	125%	0.0151	0.0151	100%	0.0151	0.0188	125%	0.0150	0.0188	125%
	6	0.0156	0.0159	0.0159	-	0.0157	0.0161	-	0.0156	0.0157	-	0.0157	0.0157	-	0.0156	0.0156	-	0.0156	0.0156	-
	7	0.0183	0.0154	0.0185	120%	0.0152	0.0186	123%	0.0150	0.0184	122%	0.0152	0.0152	100%	0.0151	0.0183	121%	0.0150	0.0183	122%
	8	0.0139	0.0144	0.0144	-	0.0141	0.0146	-	0.0140	0.0141	-	0.0141	0.0141	-	0.0140	0.0140	-	0.0139	0.0139	-
	9	0.0103	0.0154	0.0110	72%	0.0152	0.0113	74%	0.0151	0.0107	71%	0.0152	0.0152	100%	0.0151	0.0105	70%	0.0150	0.0104	69%
	10	0.0151	0.0154	0.0155	101%	0.0151	0.0156	103%	0.0151	0.0153	102%	0.0152	0.0152	100%	0.0151	0.0152	101%	0.0150	0.0151	101%
AQF43	5	0.0100	**0.0306**	**0.0105**	34%	**0.0308**	**0.0109**	35%	**0.0310**	**0.0102**	33%	**0.0305**	**0.0305**	100%	**0.0307**	**0.0102**	33%	**0.0309**	**0.0100**	32%
	6	0.0140	0.0154	0.0144	94%	0.0151	0.0146	97%	0.0150	0.0142	94%	0.0151	0.0151	100%	0.0151	0.0141	94%	0.0150	0.0140	93%
	7	0.0151	0.0155	0.0155	-	0.0152	0.0157	-	0.0151	0.0153	-	0.0153	0.0153	-	0.0152	0.0152	-	0.0151	0.0151	-
	8	0.0161	0.0165	0.0165	-	0.0162	0.0166	-	0.0161	0.0163	-	0.0162	0.0162	-	0.0161	0.0161	-	0.0161	0.0161	-
	9	0.0129	0.0154	0.0135	87%	0.0152	0.0137	90%	0.0151	0.0132	88%	0.0152	0.0152	100%	0.0151	0.0130	86%	0.0150	0.0129	86%
	10	0.0145	0.0149	0.0149	-	0.0146	0.0151	-	0.0146	0.0148	-	0.0147	0.0147	-	0.0146	0.0146	-	0.0145	0.0145	-
AQF44	5	0.0178	0.0179	0.0179	-	0.0179	0.0181	-	0.0178	0.0179	-	0.0178	0.0178	-	0.0178	0.0178	-	0.0178	0.0178	-
	6	0.0142	0.0154	0.0146	95%	0.0151	0.0148	98%	0.0150	0.0144	96%	0.0151	0.0151	100%	0.0151	0.0143	95%	0.0150	0.0142	95%
	7	0.0161	0.0154	0.0165	107%	0.0152	0.0166	109%	0.0150	0.0163	108%	0.0152	0.0152	100%	0.0151	0.0161	107%	0.0150	0.0161	107%
	8	0.0151	0.0155	0.0155	-	0.0153	0.0157	-	0.0151	0.0153	-	0.0153	0.0153	-	0.0152	0.0152	-	0.0151	0.0151	-
	9	0.0122	0.0154	0.0128	83%	0.0152	0.0130	86%	0.0151	0.0125	83%	0.0152	0.0152	100%	0.0151	0.0123	82%	0.0150	0.0122	82%
	10	0.0182	0.0154	0.0184	119%	0.0151	0.0185	122%	0.0151	0.0183	122%	0.0152	0.0152	100%	0.0151	0.0182	121%	0.0150	0.0182	121%
AQF45	5	0.0201	0.0202	0.0202	-	0.0201	0.0202	-	0.0201	0.0201	-	0.0200	0.0200	-	0.0201	0.0201	-	0.0201	0.0201	-
	6	0.0148	0.0152	0.0152	-	0.0149	0.0154	-	0.0148	0.0149	-	0.0150	0.0150	-	0.0149	0.0149	-	0.0148	0.0148	-
	7	0.0175	0.0178	0.0178	-	0.0176	0.0178	-	0.0175	0.0176	-	0.0175	0.0175	-	0.0175	0.0175	-	0.0175	0.0175	-
	8	0.0175	0.0178	0.0178	-	0.0176	0.0179	-	0.0175	0.0176	-	0.0175	0.0175	-	0.0175	0.0175	-	0.0175	0.0175	-
	9	0.0126	0.0132	0.0132	-	0.0128	0.0134	-	0.0127	0.0129	-	0.0129	0.0129	-	0.0127	0.0127	-	0.0126	0.0126	-
	10	0.0128	0.0134	0.0134	-	0.0130	0.0135	-	0.0129	0.0131	-	0.0131	0.0131	-	0.0129	0.0129	-	0.0128	0.0128	-
AQF40 Median	May-Oct	0.0151	0.0154	0.0142	92%	0.0152	0.0144	95%	0.0151	0.0140	93%	0.0152	0.0140	92%	0.0151	0.0152	101%	0.0150	0.0151	101%
AQF40 90P	May-Oct	0.0195	0.0201	0.0187	93%	0.0201	0.0187	93%	0.0201	0.0185	92%	0.0199	0.0184	92%	0.0200	0.0190	95%	0.0200	0.0190	95%
AQF40 10P	May-Oct	0.0120	0.0136	0.0126	93%	0.0132	0.0128	97%	0.0131	0.0123	93%	0.0134	0.0123	92%	0.0132	0.0124	94%	0.0131	0.0123	94%

NOA-02-02-E4: Model Predictions for the Mixing Zone Scenario with Updated Inputs for Total Phosphorus

Site	Month (May to October)	Baseline (mg/L)	90 Percentile Pit Concentration								
			Meadian Flow			10P Flow			90P Flow		
			Original	Update	Percent of Original Value	Original	Update	Percent of Original Value	Original	Update	Percent of Original Value
			mg/L	mg/L		mg/L	mg/L		mg/L	mg/L	
AQF40	5	0.0131	0.0227	**0.0138**	61%	0.0227	**0.0134**	59%	0.0227	**0.0131**	58%
	6	0.0215	0.0151	**0.0221**	146%	0.0151	**0.0217**	144%	0.0151	**0.0216**	143%
	7	0.0123	0.0118	0.0137	116%	0.0118	0.0128	109%	0.0118	0.0125	106%
	8	0.0154	0.0151	0.0165	109%	0.0151	0.0158	104%	0.0151	0.0155	103%
	9	0.0116	0.0118	0.0130	110%	0.0118	0.0121	103%	0.0118	0.0118	100%
	10	0.0146	0.0201	**0.0157**	78%	0.0201	**0.0149**	74%	0.0201	**0.0147**	73%
AQF41	5	0.0192	0.0151	0.0197	131%	0.0151	0.0195	129%	0.0151	0.0193	128%
	6	0.0206	0.0207	0.0213	103%	0.0207	0.0209	101%	0.0207	0.0207	100%
	7	0.0133	0.0134	0.0146	108%	0.0134	0.0137	102%	0.0134	0.0134	100%
	8	0.0151	0.0152	0.0162	107%	0.0152	0.0155	102%	0.0152	0.0152	100%
	9	0.0157	0.0151	0.0168	111%	0.0151	0.0161	106%	0.0151	0.0158	105%
	10	0.0153	0.0155	0.0164	106%	0.0155	0.0157	101%	0.0155	0.0155	100%
AQF42	5	0.0188	0.0151	0.0194	128%	0.0151	0.0191	127%	0.0151	0.0189	125%
	6	0.0156	0.0157	0.0165	105%	0.0157	0.0160	102%	0.0157	0.0157	100%
	7	0.0183	0.0151	0.0192	127%	0.0151	0.0186	123%	0.0151	0.0184	122%
	8	0.0139	0.0140	0.0151	108%	0.0140	0.0143	102%	0.0140	0.0140	100%
	9	0.0103	0.0151	0.0118	78%	0.0151	0.0108	71%	0.0151	0.0105	69%
	10	0.0151	0.0152	0.0162	107%	0.0152	0.0155	102%	0.0152	0.0153	101%
AQF43	5	0.0100	**0.0310**	**0.0109**	35%	**0.0310**	**0.0104**	34%	**0.0310**	**0.0101**	33%
	6	0.0140	0.0151	0.0150	99%	0.0151	0.0144	95%	0.0151	0.0141	93%
	7	0.0151	0.0152	0.0163	107%	0.0152	0.0155	102%	0.0152	0.0152	100%
	8	0.0161	0.0162	0.0172	106%	0.0162	0.0165	102%	0.0162	0.0162	100%
	9	0.0129	0.0151	0.0142	94%	0.0151	0.0134	88%	0.0151	0.0131	86%
	10	0.0145	0.0147	0.0157	107%	0.0147	0.0149	101%	0.0147	0.0147	100%
AQF44	5	0.0178	0.0179	0.0184	103%	0.0179	0.0181	101%	0.0179	0.0179	100%
	6	0.0142	0.0151	0.0152	101%	0.0151	0.0146	97%	0.0151	0.0143	95%
	7	0.0161	0.0151	0.0172	114%	0.0151	0.0165	109%	0.0151	0.0162	107%
	8	0.0151	0.0152	0.0162	107%	0.0152	0.0155	102%	0.0152	0.0152	100%
	9	0.0122	0.0151	0.0136	90%	0.0151	0.0127	84%	0.0151	0.0124	82%
	10	0.0182	0.0152	0.0191	126%	0.0152	0.0185	122%	0.0152	0.0183	121%
AQF45	5	0.0201	0.0201	0.0206	102%	0.0201	0.0203	101%	0.0201	0.0201	100%
	6	0.0148	0.0149	0.0158	106%	0.0149	0.0152	102%	0.0149	0.0149	100%
	7	0.0175	0.0176	0.0185	105%	0.0176	0.0178	101%	0.0176	0.0176	100%
	8	0.0175	0.0176	0.0185	105%	0.0176	0.0179	101%	0.0176	0.0176	100%
	9	0.0126	0.0128	0.0139	109%	0.0128	0.0131	102%	0.0128	0.0128	100%
	10	0.0128	0.0130	0.0141	108%	0.0130	0.0132	102%	0.0130	0.0130	100%
AQF40 Median	May-Oct	0.0151	0.0151	0.0148	98%	0.0151	0.0142	94%	0.0151	0.0139	92%
AQF40 90P	May-Oct	0.0195	0.0201	**0.0193**	96%	0.0201	**0.0188**	93%	0.0201	**0.0185**	92%
AQF40 10P	May-Oct	0.0120	0.0132	0.0133	101%	0.0132	0.0124	94%	0.0132	0.0121	92%

Notes:

10P = 10th percentile; 90P = 90th percentile

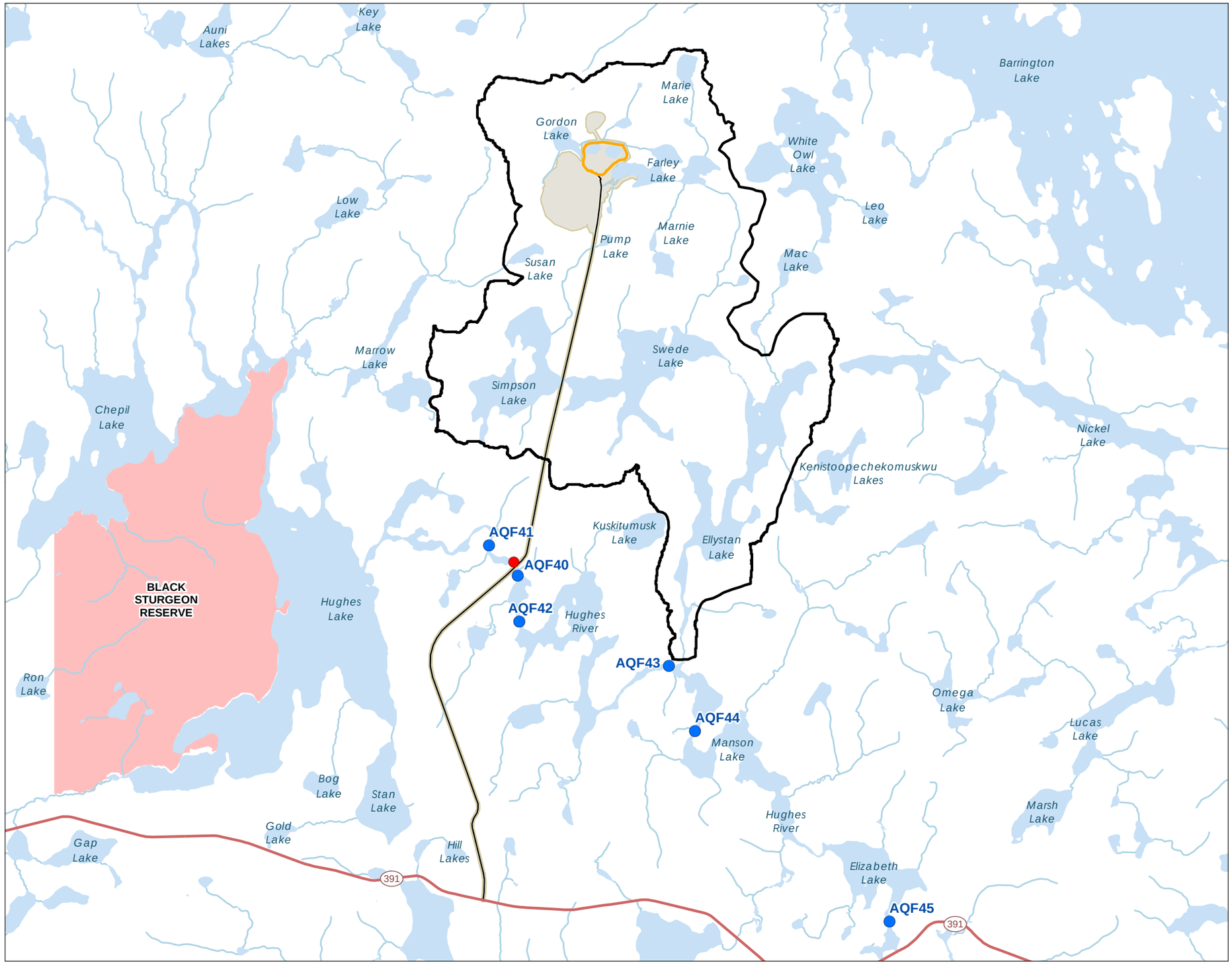
Bold values = concentrations above the MWGSOG for total phosphorus (mg/L)

Shadec cells = updated values that differ from the original value

Bold red cells = a change in eutrophic status based on the CCME trigger ranges for total phosphorus. Changes were mostly from meso-eutrophic (0.02 - 0.035 mg/L) to mesotrophic (0.01 to 0.02 mg/L), but in some cases (i.e., June at AQF40), the change was from mesotrophic to meso-eutrophic.

DRAFT

ATTACHMENT NOC-02-03



Stantec

Proposed Sample Locations

- Proposed Water Quality Sampling Site
- Pit Dewatering Discharge Location

Project Infrastructure

- Proposed Open Pit
- Project Development Area

Study Area

- Fish and Fish Habitat Local Assessment Area (LAA)

Landbase

- Existing Access Road
- Highway
- Watercourse
- Waterbody
- First Nation Reserve

N

0 1 2 Kilometres

(At original document size of 11x17)
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Notes

1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base Data Sources: Government of Manitoba and Government of Canada.

Project Location
Lynn Lake, Manitoba

Prepared by ACampigotto on 2024-09-10
Technical Review by JJackson on 2024-09-10

Client/Project
ALAMOS GOLD INC.
Lynn Lake Gold Project

111473076

Map No.
NOC-02-03-1

Title
Hughes River Baseline Monitoring Locations - 2022 and 2023

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